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ORIGINAL ARTICLES

EARLY MANAGEMENT OF PATIENTS WITH SPINAL CORD INJURY 89
D. A. Covalt, M.D.; I. S. Cooper, M.D.; T. I. Hoen, M.D., and H. A. Rusk, M.D., New York

CLINICAL SIGNIFICANCE OF SOME CONGENITAL CHANGES IN THE OPTIC DISK 95
A. J. Bedell, M.D., Albany, N. Y.

MANAGEMENT OF OSTEOARTHRITIS IN THE AGED 98
J. G. Kuhns, M.D., Boston

CONSERVATIVE MANAGEMENT OF FRACTURES OF THE ANKLE INVOLVING THE MEDIAL MALLEOLUS 102
R. B. Portis, M.D., and H. A. Mendelsohn, M.D., Beverly Hills, Calif.

PUBLIC HEALTH ASPECTS AND PREVENTION OF BRONCHOPULMONARY DISEASE 105
W. Finke, M.D., Rochester, N. Y.

CHANGING INDICATIONS FOR THERAPEUTIC ABORTION 108
K. P. Russell, M.D., Los Angeles

MASS SCREENING TECHNIQUES FOR CHEST DISEASES 112
O. M. Derryberry, M.D., Chattanooga, Tenn.

MASS SCREENING TECHNIQUES FOR CHEST DISEASES 114
A. C. Christie, M.D., Washington, D. C.

RESULTS OF KENNY TREATMENT OF ACUTE POLIOMYELITIS 117
M. E. Knapp, M.D.; L. Sher, M.D., and T. S. Smith, M.D., Minneapolis

FACTS ABOUT URETEROSIGMOIDOSTOMY 120
C. D. Creevy, M.D., Minneapolis

CLINICAL NOTES

FATAL ASPHYXIA DUE TO MASSIVE HEMOPTYSIS IN A CASE OF MITRAL STENOSIS .. 124
H. J. Isaacs, M.D.; M. J. Barrash, M.D., and D. R. Russ, M.D., Chicago

ANGLED NEEDLE FOR SUTURING AURICULAR APPENDAGE IN COMMISSUROTOMY ... 127
G. H. Pratt, M.D., New York

EDITORIALS

Correction 128
Congress on Medical Education and Licensure 128
Annual Congress on Industrial Health ... 128
Methonium-Controlled Hypotension in Surgery 129

ORGANIZATION SECTION

Forty-Ninth Annual Congress on Medical Education and Licensure 130
Thirteenth Annual Congress on Industrial Health 132
Evening Meeting at A. M. A. Headquarters 133
Hospitals Get A. M. A. Pamphlet 133
If You Change Your Address 133

REGULAR DEPARTMENTS

Medical News 134
Examinations and Licensure 136
Meetings 137
Deaths 138
Foreign Letters:
Brazil 139
Italy 139
London 140
Correspondence:
Statements of American Heart Association Council on Rheumatic Fever and Congenital Heart Disease. Professional Endorsement of Advertising. Caution in Use of Phenylbutazone. Social Security in Ecuador. William Bryan Sanders. 141
Council on Medical Service:
Medical Care for the Indigent in Cascade County (Great Falls), Montana .. 144
Medical Literature Abstracts 147
Book Reviews 163
Queries and Minor Notes:
Functional Hypoglycemia. Lead Encephalopathy. Coronary Disease. Treatment of Alcoholism. Pylorospasm. Infectious Hepatitis of Dogs. Razors and Homologous Serum Hepatitis. Thymectomy for Myasthenia Gravis. Hair on the Legs. Myocardial Infarction. 165

WASHINGTON NEWS

Lowered Standards for Physicians in Service. Nutritional Deficiencies. Baltimore Heart Program. Rehabilitation. Hospital Construction. Public Assistance. Miscellany. ..... Adv. Page 11
Organizations of National Medical Interest ..... Adv. Page 16
Tonics and Sedatives ..... Adv. Page 44

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EARLY MANAGEMENT OF PATIENTS WITH SPINAL CORD INJURY

Donald A. Covalt, M.D., Irving S. Cooper, M.D., Thomas I. Hoen, M.D.
and
Howard A. Rusk, M.D., New York

During the past four years, a paraplegic unit has constituted a principal part of the Institute of Physical Medicine and Rehabilitation of the New York University-Bellevue Medical Center. During this time, over 400 paraplegic patients have been hospitalized at this institution for definitive treatment and rehabilitative care. It has become increasingly evident that the treatment of paraplegic patients is constituted chiefly in the therapy of complications of the spinal cord injury. In most instances these complications, such as decubitus ulcers, genitourinary infections and calculi, soft tissue calcification, joint deformity, intractable pain and spasticity, and psychological sequelae, could be prevented or mitigated if an early, efficient program of patient care was started immediately following incurrence of the trauma. Despite the fact that there have been many excellent communications dealing with the treatment of paraplegics since the end of World War II, the majority of paraplegic patients arriving for rehabilitation require prolonged hospitalization and definitive therapy of preventable complications before a rehabilitation program can be instituted.

It is the purpose of this paper to outline briefly what we consider to be the proper handling and treatment of the patient during the acute period following injury to the spinal cord; that is, the first few weeks after injury. Such measures employed early can spare the paraplegic months of hospitalization, considerable discomfort, and prohibitive expense. The proper handling of a patient who has suffered an injury to the spinal cord should start immediately at the time of his injury before the patient has been moved. A definite and conclusive regimen from that time on for the next 14 days will prevent a great many of the complications of cord injury that, so we have found during the past four years, have followed almost invariably in the course of most paraplegic disorders. It has been our experience, in the management of patients with spinal cord injury, that an efficient and close working team of medical and surgical specialists is necessary to handle the complicated problems that many of these patients present. Such a team must include specialists in neurosurgery, orthopedic surgery, general surgery, plastic surgery, urologic surgery, internal medicine, and in the field of physical medicine and rehabilitation. There are others, such as a psychiatrist, indicated in certain instances.

PREOPERATIVE CARE

First Aid at Scene of Accident.—A patient who has been partially or totally paralyzed by acute spinal cord injury should not be hastily moved from the scene of the accident, as blood loss and surgical shock are rarely important factors in these patients' condition. First, a survey of the situation should be carefully made. Then, if at all possible, the removal of the injured person should be supervised by a physician. The following instructions may be used as a general first-aid guide.

Primarily, do not flex or hyperextend the patient's back; even his head should not be lifted unless it is essential to the establishment of an efficient airway for respiration. Do not attempt to have the patient to sit up or help him to stand. Instead, allow him to lie in a perfectly extended position with head back and knees and arms straight in what is known as the neutral anatomic position. He should lie upon as level a surface as possible.

Next, the patient should be rolled over onto the level surface of either a stretcher or a wide, flat board. If he must be lifted, he should be picked up slowly by not less than six men working together, with his head, neck, back, and legs all held straight in the neutral anatomic position. The stretcher used should be firm and flat, since the ordinary canvas stretcher tends to cause flexion of the patient's back. A flat plywood board of sufficient strength

From the New York University College of Medicine and the New York University-Bellevue Medical Center, Institute of Physical Medicine and Rehabilitation.

Read before the joint meeting of the Section on General Practice and the Section on Physical Medicine and Rehabilitation at the 101st Annual Session of the American Medical Association, Chicago, June 12, 1952.

to support a man is probably the best stretcher for these patients. If possible, it should have handles so that four to six men can carry a patient with ease. An ordinary door makes an excellent stretcher. In transporting, do not bounce or jostle the patient. If at all possible, it would be best to take him directly to a paraplegic center. If this is not possible, however, remove the patient directly on the stretcher to the closest hospital.

Initial Care at Local Hospital.—Allow as little movement of the patient as possible. Roentgenograms of the back can be taken on the original stretcher. In any event, do not bend the patient's back to take them. It is preferable to defer roentgenography rather than risk further injury to the spinal cord by dislodging loose bone fragments of the vertebra. For a bed, a flat, hard surface covered with a foam rubber mattress is satisfactory. A Stryker frame may be used. This will enable the nurses and the attendants to turn the patient frequently, with little effort on their part and with little pain and no risk of further injury to the patient.

While plans are being made (if necessary to do so) to transfer the patient by air ambulance or by train to a paraplegic center for definitive care and surgery as needed, the following factors should receive particular attention:

Nursing Care: Twenty-four hour special nursing is essential. A graduate nurse with paraplegic training should be in charge. Male attendants under the supervision of the graduate nurse may be utilized for the turning and care of these patients, but they must be trained attendants. A single twisting or flexion of the spine may be enough to make a reversible spinal cord lesion into an irreversible lesion with no hope of further return of function of the muscles of the lower extremities.

Temperature Control: During the period of spinal shock, many paraplegic patients cannot sweat on the paralyzed portions of their bodies, and, consequently, there may be spontaneous febrile episodes. If other causes cannot be found, antipyretic measures such as acetylsalicylic acid, fans, cold water sponges, and ice water enemas can be used. Sweating usually returns after the period of spinal shock subsides, and in some patients profuse sweating may develop over the nonparalyzed portion of their bodies.

Transporting: If it is necessary to transport the patient, the patient can be placed in a plaster body cast with the back in a neutral straight position in normal extension. Do not hyperextend patients with spinal cord injury who have neurological damage below the site of injury. The body cast can be bivalved and the posterior splint well padded, so that the patient can be transported safely in the posterior splint. The posterior arch of the vertebra may cause additional injury to the spinal cord if the back is hyperextended.

Drugs: 1. Avoid opiates if at all possible. Many paraplegic patients do not have severe pain early. If opiates are necessary, use those preparations that are not so habit forming and rotate these at frequent intervals. It has been our experience that opiates should rarely be used. Most pain complained of by paraplegics can be controlled with codeine, acetylsalicylic acid compound, and sedatives. Many paraplegics have become drug addicts because of the indiscriminate use of opiates. 2. Inject intramuscularly 50 mg. of testosterone propionate daily from the first day of injury. This will decrease the incidence of tissue breakdown, weight loss, and decubitus ulcer formation. 3. Use small, repeated doses of a urinary antiseptic, such as methenamine (urotropin®), or of sulfonamides to help prevent urinary infection.

Bladder Care: An indwelling urethral catheter (Foley) should be introduced early during the acute period. The bladder should be irrigated three times daily with isotonic sodium chloride solution. Care must be taken that it does not become blocked. The catheter should be changed at least twice weekly. Absolute asepsis must be the rule throughout. Abdomen must be checked frequently for bladder distention.

Bowel Care: Acute spinal cord injury may be followed by profound distention of the bowel. This occasionally becomes so severe as to embarrass respiration, interfere with ingestion of food, and produce severe discomfort. Gaseous distention of the bowel should be treated with neostigmine (prostigmine®) methylsulfate intramuscularly or by rectal tube, enema, and, if necessary, Wangensteen drainage. The rectum should be emptied every other day by digital evacuation, suppositories, or enemas.

Feeding: A high calory (4,000), high protein (150 gm.) diet is essential. If a patient cannot eat satisfactorily, plasma and whole blood should be given in small repeated doses intravenously. Tube feeding must be resorted to if necessary.

Skin Care: The patient should be turned at least every two hours night and day to prevent bedsores. There are five places where decubitis ulcers most frequently occur: the sacrum, trochanters, and ischia. In addition, ulcers may develop over the knees, on the heels of the feet, and on the forehead in the case of a patient with a cervical vertebral fracture in the prone position. Light skin massage over pressure areas can be of help to prevent ulcers.

Laboratory Studies: Routine urinalysis, hemoglobin and plasma protein determinations, and white blood cell count should be obtained at least once weekly.

Physical Medicine and Rehabilitation: Patients with paraplegia may undergo marked atrophy of the unaffected upper extremities from disuse, malnutrition, and general lowering of metabolism. Paraplegic patients should be started on active exercises of the unaffected parts of the body, with special precaution that the spine is not flexed or hyperextended. Resistive exercises to build up triceps and all muscles of the shoulder girdle should be started as soon as possible after admission to the hospital. The triceps are perhaps the most important muscles used in ambulation with crutches in the latter stages of rehabilitation. All joints of the lower extremities should be carried passively through a complete range of motion twice daily. Care must be taken to prevent foot drop, which frequently develops in these patients. The bedsheets should not be pulled down tightly over the foot of the bed. The patient's foot should be kept at

a right angle to the leg at all times, either by means of a foot board or preferably by a posterior splint of plaster. These patients must have a 90 degree dorsiflexion of the foot at the ankle in order to be properly fitted with braces and shoes.

If the above measures are carried out rigorously and routinely, many months of medical and surgical care can be saved. Further damage to the spinal cord with increased paralysis can be avoided, and paraplegic patients will be ready for ambulation and other rehabilitation procedures much earlier. Moreover, early standing and ambulation are the most efficient and best physiological means of preventing urinary infection and calculi, hypoproteinemia, and decubitus ulcers.

ADVISABILITY OF LAMINECTOMY

During the early phase of the post-traumatic period, it is necessary to decide whether a laminectomy is indicated. This question has been controversial for the past 25 years, and it is still the subject of considerable debate at most paraplegic centers. It is our policy to recommend laminectomy in every early case of paraplegia that is due to injury of the thoracic and lumbar spine. Every patient in whom there is a cervical vertebra dislocation should have it reduced. Skeletal traction should be tried first, and, if not successful, it should be followed by a laminectomy. Although this may appear to some physicians to be a radical approach to this problem, it is our opinion that early routine laminectomy in such cases is not only indicated but is actually the conservative course of action for the reasons listed herewith.

1. At the present time there is no way of ascertaining by neurological examination whether there has been an anatomic transection of the spinal cord. Although there may be clinical evidence of complete physiological transection, an examiner is not justified by clinical examination alone in stating that the cord has been irreparably damaged and in concluding therefrom that laminectomy would be of no avail. Therefore, unless it has been determined by surgical exploration that the spinal cord has been transected, one cannot conclude during the early weeks after injury that a patient is permanently and irreversibly paraplegic. Although an examiner who makes such conclusion on the basis of his neurological examination may end up with a good statistical average as far as determining prognosis is concerned, such an opinion in an individual case cannot be relied upon. This is demonstrated by the reports of cases 1 and 2 below.

2. Complete reliance upon roentgenographic examination in evaluation of spinal cord injuries is not justified. McCravey [1] has so reported, and it has been our experience that although such examination is of considerable aid in estimating neurological damage, it is not to be solely relied upon. This has recently been graphically demonstrated to our satisfaction in the treatment of three patients reported elsewhere. These patients were all seen within a period of one week, with all three having fracture dislocation of the first lumbar vertebra and paraplegia. The roentgenographic examination of these patients was almost identical; however, at surgery, the spinal cord and upper cauda equina of one was found to be completely transected, another was found to be involved in a marked traumatic adhesive arachnoiditis, while the third suffered only compression from the dislocated vertebrae. The latter patient has had considerable functional return since operation.

3. It has been our experience that a small percentage of patients who undergo laminectomy even as long as one year after injury will derive some benefit from surgery. In a large series of traumatic paraplegics subjected to routine laminectomy at the St. Albans Hospital during World War II, three months or longer after injury, 3% demonstrated a useful degree of neurological improvement.[2] This percentage has been improved upon in civilian paraplegics. It has been our experience that particularly at the critical levels, such as the level of the origin of the brachial or lumbosacral plexuses, one can usually anticipate at least a recovery of two or three roots following laminectomy. This is often sufficient compensation to the patient for undergoing laminectomy. Illustrative cases are presented later in this paper.

4. The complications of pain and spasticity in chronic paraplegia occur less frequently in those patients who have been subjected to a satisfactory laminectomy and decompression than in those who have not undergone a similar operation. The study of Scarff and Pool regarding chronic irritative foci following spinal cord injury is germane to this finding.[3] The removal of bone spicules, foreign bodies, hematomas, and dural scars will remove factors favorable to the development of chronic pain and spasticity. This is graphically illustrated in case 3 below.

5. Laminectomy carries a low mortality and morbidity rate. From a mortality standpoint it compares favorably with such operations as tonsillectomy. Moreover, when necessary, it is performed without difficulty under local anesthesia; it usually can be completed in from one to one and one-half hours; and, if spinal fusion is not indicated, it does not delay the subsequent treatment and rehabilitation of the patient. We feel that if there is any improvement in traumatic paraplegics resulting from laminectomy, the operation of laminectomy would appear to be very worth while, particularly in view of the safety of the procedure.

6. Psychologically, paraplegic patients adjust to their disability better if they feel everything possible in the way of definitive treatment has been done for them, a fact that was forcibly pointed out by McCravey.[1] We have never had a patient refuse laminectomy after he had been informed honestly and straightforwardly about the facts and allowed to decide whether he chose to be operated on. On the other hand, we have admitted many patients to this institution who felt very bitter because they had not been offered the prerogative of surgical exploration of the spinal cord. It seems logical to most

1. McCravey, A.: War Wounds of Spinal Cord: Plea for Exploration of Spinal Cord and Cauda Equina Injuries, J. A. M. A. **129**: 152-153 (Sept. 8) 1945.

2. Hoen, T. I., and Cooper, I.: Laminectomy in Traumatic Paraplegia, unpublished data.

3. Scarff, J. E., and Pool, J. L.: Factors Causing Massive Spasm Following Transection of Cord in Man, J. Neurosurg. **3**: 285-293 (July) 1946.

of these patients, as it does to us, that the place where treatment should first be directed in the management of the spinal cord injury is the spinal cord itself. Crutchfield and Schultz [4] have pointed out that laminectomy is the treatment of choice for decompression of the spinal cord canal in the thoracic and upper lumbar region. Guttmann,[5] however, feels that a nonsurgical approach is the treatment of choice in the management of such cases. In view of the very low morbidity and mortality of a laminectomy and in view of the lifetime of paraplegia that these patients face, we find it difficult to account for this conservative attitude.

It is not necessary for these patients to remain bedfast for long periods of time following laminectomy. Many of our patients are allowed to sit up and even to get out of bed at the end of 7 to 10 days with a small spinal brace. The following cases illustrate this and other factors outlined above.

REPORT OF CASES

CASE 1.—An 18-year-old girl was admitted to the physical medicine and rehabilitation service on Nov. 27, 1951. She had been paraplegic since receiving a gunshot wound of the spine three months prior to admission. At that time the neurological consultant stated that the neurological lesion of the spinal cord was complete. Neurological examination on admission revealed a sensorimotor level at the 12th thoracic segment. The lower extremities were flaccid. The Babinski reflex was elicited in the right extremity. Roentgenographic examination revealed steel bullet fragments in the intraspinal canal at the level of the 12th thoracic segment. On Dec. 13, 1951, a laminectomy was done. At operation bullet fragments were not found in the subarachnoid space as it was originally believed they would be from the roentgenographic examination but were discovered imbedded in the lamina of the 12th thoracic vertebra, which in turn was depressed and was compressing the cord. A wide decompression was carried out. The dura was opened, and the conus medullaris and cauda equina were seen to be intact. The day following surgery the patient had return of sensation to all dermatomes of the lower extremities, including the saddle zone. Within seven days after surgery she had recovered slight motion of most muscle groups of the left lower extremity and subsequently developed some motion of the right thigh.

Comment.—This case supports several of the theses advanced above, namely: 1. One cannot determine unequivocally from the neurological findings alone as to whether the spinal cord has been anatomically transected. 2. The roentgenogram cannot be solely relied upon. 3. These patients may be eager to have a laminectomy performed. 4. Neurological improvement will sometimes ensue following a laminectomy as long as three months after spinal cord injury.

CASE 2.—A 39-year-old miner became paraplegic on April 19, 1951, when he was struck on the back and shoulder by falling rock. Paralysis was immediate and complete below the first lumbar level. During the ensuing three months the patient developed weak contraction of the left gastrocnemius muscle but no additional recovery. He had had no further recovery during the month prior to admission to our service on Aug. 8, 1951. Neurological examination revealed flaccid paralysis below the second lumbar dermatome. Roentgenograms revealed fracture dislocation of the second and third lumbar vertebrae, with marked narrowing of the spinal canal in this region. The patient complained bitterly of sharp, knife-like pains down the posterior aspect of both lower extremities to the heels. On Aug. 15, four months after the original injury, a laminectomy and a decompression were carried out. The cauda equina at the site of compression was found intact. The day following surgery there was marked improvement in the patient. He was completely free of radicular pain within 24 hours after surgery, and from that time he had rapid and complete return of sensorimotor function in the lower extremities. At the time of preparation of this paper, the patient was up and about and could walk without the use of braces or crutches.

Comment.—This case illustrates the fact that laminectomy can serve a useful purpose for as long as four months after injury. There was not only sensorimotor return in this patient but also beneficial effect upon radicular pain that resulted from compression of the nerve roots in the cauda equina.

CASE 3.—The patient, a woman, was injured in an automobile accident, May, 1951, at which time she suffered immediate and complete paralysis of the lower extremities. She was admitted to our service in November, 1951. Two months prior to admission the paralyzed lower extremities had become increasingly spastic, and flexor spasticity and mass reflexes constituted a problem in attempted rehabilitation of this patient. Neurological examination demonstrated a sensorimotor paralysis below the fifth thoracic segment. The deep tendon reflexes were extremely hyperactive, and there was marked spasticity in both lower extremities. Spinal puncture demonstrated normal manometric readings without evidence of intraspinal block. A roentgenogram revealed a fracture dislocation of the third and fourth thoracic vertebrae, but there was no obvious encroachment upon the spinal canal. A laminectomy was carried out, at which time the spinous processes and lamina of the third and fourth thoracic vertebrae were removed. Despite this decompression the dura did not pulsate, and further exploration revealed that a fragment of the lamina of the third thoracic vertebra had broken free and lay under the lamina of the second thoracic vertebra, producing extradural pressure at this site. When this fragment was removed, the dura pulsated freely, and it was felt that an adequate decompression had been carried out. When the dura was opened, the spinal cord did not present any gross abnormalities. From the day following surgery this patient was entirely free of spasticity and the involuntary flexor spasm of the lower extremities. Moreover, there has been gradual return of perception of touch, pain, and deep pressure sensation in all dermatomes of the lower extremities.

Comment.—This case demonstrates several factors referred to above. Reliance upon the roentgenogram cannot be unequivocal. Even in retrospect, on examination of the roentgenograms one could not discern the displaced fragment of the third thoracic lamina that was producing extradural pressure upon the spinal cord. Moreover, this case lends support to the report of Scarff and Pool [3] that central irritative factors play a part in the production of spasticity in traumatic paraplegia, inasmuch as adequate decompression resulted in cessation of distressing spasticity in this particular patient.

Recently there has been considerable publicity in the lay press relative to the use of "piromen" (a polysaccharide derivative) and its effect on spinal regeneration. Primary work on this pyretic was done by Windle and his associates. Their work on experimental animals with transected cords has shown a marked decrease in fibrosis and glial reaction and an increase in neuronal regeneration. Although there was evidence of axonal regeneration across the scar, in none of the experimental

4. Crutchfield, W. G., and Schultz, E. C.: Fractures and Dislocations of Spine, Am. J. Surg. 75: 219-226 (Jan.) 1948.

5. Guttmann, L.: Personal communication to the authors.

animals was there evidence of functional return, even in those animals followed for a period of over one year.

A case was reported of a young college student with a fracture dislocation between the fifth and sixth cervical vertebrae who had made remarkable recovery—the first human given "piromen" for this condition. This patient was seen at our institute in September, 1950, at which time he exhibited all of the clinical findings of partial quadriplegia at this level. However, it should be pointed out that he had never had a laminectomy, and there was no proof that the cord had been transected. Under a full rehabilitation program this patient did make an exceptional recovery and has now returned to college and walks extremely well with a short leg brace. The function of his upper extremities has returned completely.

Since our experience in this case, 10 patients with transected cords or with severe trauma to the cord as demonstrated by laminectomy have received one or several courses of this drug in the dosage recommended by Windle. Except in one patient in whom the sensory level dropped one dermatome, there was no evidence of improved function or other therapeutic effect. From our experience it must be concluded, as of this writing, that "piromen" is not an effective therapeutic agent in spinal cord section or in severe spinal cord trauma. However, the results in experimental animals certainly indicate the necessity of further experiments with this drug.

POSTOPERATIVE THERAPY

Early Standing.—A simple but very important procedure in the handling of paraplegic patients is the use of a tilt board in getting the patient to stand. The tilt board can be used during the early care of the paraplegic and can be started again 10 to 14 days after neurosurgery in the ordinary laminectomy. The tilt board is a 24-in. wide board approximately 4½ to 6 ft. long, according to the height of the patient, and it may have another small board attached at its end, at right angle, for the patient to stand on. Holes are drilled along the edge of the board for straps to accomodate different heights of patients. The patient is strapped to the board with soft, leather-padded fabric lacers below the knees, above the knees, at the pelvis, and across the thoracic cage. The board is placed beside the patient in bed, and he is then either rolled or carefully placed on the padded board and laced in (see figure). The end of the board is swung over the edge of the bed and carefully placed on the floor. The angle of inclination at the start should be around 30 degrees. The patient is watched closely for signs of discomfort, such as paleness, increased sweating, and increase of pulse rate. After 15 to 20 seconds, the edge of the board can be brought up level with the bed again. After one-half hour, the patient is again brought down to the 30 degree inclination. This should be accomplished twice daily and the angle of inclination increased until the patient is standing in an upright position. Time of standing should be increased to a minimum of one hour daily.

We have found that by utilizing the standing procedure as described above, paraplegics who have large decubitus ulcers or urinary infection show the following changes: Blood proteins approach normal within a two to three week period of time, urinary infections are cut down, and, most important, the osteoporotic changes in the long bones so common in these cases become less. The ideal time for plastic repair (full-thickness flap) of existing ulcers is after the blood proteins return to normal. Ulcers tend to heal much more rapidly and without danger of slough. Calcium is again deposited in the long bones of the legs, and there is much less likelihood of formation of kidney and bladder stones. The incidence of urinary infections is less.

Rehabilitation Program.—As noted earlier in this article, muscle strengthening exercises for the upper extremities and other simple rehabilitation procedures are started on the day of admission of the paraplegic patient. Of course, the acute medical and surgical problems are of first importance at this time. On completion of definitive medical and surgical therapy, rehabilitation is accelerated and the patient is placed on a full program. A usual prescription for a paraplegic would run as follows: General conditioning exercises are performed for one hour on a mat on the floor in conjunction with a group of other paraplegic patients and include strengthening exercises for the muscle groups of the upper extremities and such abdominal and trunk muscle groups as are present. The patient is taught balance while sitting and holding his spine in an erect position. Particular attention is paid to development of the latissimus dorsi muscle. Short, sawed-off crutches may be used to practice push-ups on the mat while sitting.

Paraplegic learns to stand with aid of tilt board. This patient has been securely strapped to padded tilt board while lying prone in bed and is then able to support himself in standing position alongside bed as shown.

General exercises are followed by an hour's workout in the ambulation room. The patient is fitted with braces and is taught to stand in an upright position in the parallel bars, learning to balance himself by placing his feet in position and then releasing his grasp on the parallel bars. Later he will be taught to do a swing-to gait and eventually a swing-through on the parallel bars. As he becomes more proficient and his sense of balance improves, he is started on crutches within the parallel bars, after which he is allowed to ambulate outside the parallel bars with an attendant and finally to ambulate alone. Before patients leave the institute, they are instructed in the necessity for standing in braces and crutches at least one hour a day, the purpose of which is to enhance the calcium metabolism in the long bones and to prevent the formation of kidney and bladder

stones. Because standing and exercise are so important to the patient's health, even if he does not eventually ambulate to any great extent, he is urged to spend at least one hour a day in a standing position for the rest of his life.

A two hour period per day is spent in "ADL" (Activities of Daily Living). This is perhaps one of the most important parts of the rehabilitation program, for the patient is taught to take care of his own daily needs such as cleansing and dressing himself. He must be able to put on and take off his braces, to get from the bed to the wheel chair and back again, and to rise to a standing position from his wheel chair, back up his crutches, start to ambulate, and return to his chair again. The activities of daily living include bed, toilet, eating, dressing and undressing, hand, wheel chair, elevation, walking, climbing, and traveling activities.

The fifth hour of a typical rehabilitation program for a paraplegic patient will be spent in vocational testing and guidance and social welfare problems, including psychological help if it is needed. It is heartening to see how quickly these patients accustom themselves to such an active program after weeks and months and, in some cases, even years of being confined to bed. The activities program is increased as each patient gains in strength and endurance.

Braces.—The question of proper braces for paraplegics should be considered as soon as clearance is obtained from the neurosurgical department. Braces can be ordered before the patient is getting out of bed, as it usually takes several weeks to have proper braces made.

Patients with lesions above the 10th thoracic vertebra are ordinarily fitted with long leg braces, pelvic band, and a Knight spinal attachment to the pelvic band.[6] Those with lesions below this vertebra can get along with a pelvic band and long leg braces. Patients with lesions in the lumbar region can often be fitted with long leg braces alone (no pelvic band). The long leg brace has the longer bar on the lateral side of the leg and the medial bar much shorter and well padded with leather and posteriorly fitting the gluteal fold neatly. Such a brace tends to prevent outward rotation of the feet and is very satisfactory on many of these patients.

We are beginning to use fewer pelvic bands for our paraplegics than formerly. These patients are given exercises to develop the latissimus dorsi muscle, which tends to act as a muscular corset for the trunk and, by reversing the origin and insertion of this muscle, can be used to cause a forward thrust of the pelvis. In other words, if the insertion of the latissimus dorsi muscle into the humerus is stabilized by means of the head of the crutch, this then becomes the muscle origin; and the usual sites of origin, that is, along the crests of the ilia and of the thoracic and lumbar vertebra, then become the points of insertion. With proper exercise and training, this muscle can be utilized to swing the pelvis forward. This is a most important procedure in crutch ambulation for these patients and has been described in detail by Abramson.[7] All of our braces are made of light duralumin® metal and have a 90 degree stop at the ankle. They are equipped with sliding knee locks and, in the case of braces with pelvic bands, with a sliding hip lock on either side.

SUMMARY

It has been our experience that the care of paraplegic patients in a paraplegic rehabilitation center consists for the most part in management of the complications that follow spinal cord injury. Many of these complications can be prevented or their effects mitigated by proper handling of the paraplegic during the acute period following injury.

It is our conviction that early laminectomy is the treatment of choice in patients who are paralyzed from injuries of the thoracic and lumbar spinal cord. The low morbidity and mortality rates that now attend this operation, the uncertainty as to whether an anatomic transection of the spinal cord exists, the decreased incidence of pain and spasticity among patients who have had a satisfactory laminectomy, the psychological benefit to the patient, and the neurological recovery evidenced by some patients following operation seem to us adequate indications for the performance of laminectomy prior to the institution of a long-range rehabilitation regimen.

It is necessary that a rehabilitation program be started on the paraplegic patient as soon as possible. This must include not only strengthening exercises for those muscles that are left but also training of the patient around his disability in order that he may become self-sufficient in the activities of daily living, standing, and ambulation. Such a program will tend to decrease the incidence of decubitus ulcers, urinary infection and calculi, malnutrition, and psychological depression.

400 E. 34 St. (16) (Dr. Covalt).

6. Deaver, G. G.: Evaluation of Disability and Rehabilitation Procedures of Patients with Spinal Cord Lesions, New York Institute for the Crippled & Disabled, 1947.

7. Abramson, A. S.: Principles of Bracing in Rehabilitation of Paraplegic, Bull. Hosp. Joint Dis. **10**: 175-182 (Oct.) 1949.

Cerebral Hemorrhage.—Spontaneous cerebral hemorrhage is common and often fatal. It may present in one of two main forms: (1) intracerebral hemorrhage characterized by abrupt onset of severe headache followed quickly by drowsiness and even coma, and by the rapid development of signs of focal cerebral damage, such as hemiplegia, aphasia, or hemianopia; and (2) subarachnoid hemorrhage characterized by a similar sudden onset of cerebral symptoms but differing in that there is usually little or no evidence of focal cerebral damage apart from cranial nerve lesions, such as a third-nerve palsy or a subhyaloid hemorrhage. In subarachnoid hemorrhage blood is found in the cerebrospinal fluid on lumbar puncture, whereas in intracerebral bleeding the C. S. F. may be either clear, xanthochromic, or bloodstained, according to the extent to which blood has leaked into the ventricular or the subarachnoid spaces. Either form of bleeding can affect a person at any age, although both are seen more often between the ages of 40 and 60. Both have hitherto been regarded as "vascular accidents" outside the scope of any direct intervention, and consequently have been treated routinely only by rest in bed in the hope that bleeding would cease spontaneously and not recur.

With such conservative treatment, however, the mortality from both forms of cerebral hemorrhage is high. . . . If the mortality of cerebral hemorrhage is to be lessened, we must first know its common causes and how they can be recognized during life. In this connection the distinction between intracerebral and subarachnoid forms of bleeding is a secondary consideration, for the same causal lesion may produce both types.—M. A. Falconer, F.R.C.S., The Future of Surgery in the Treatment of Spontaneous Cerebral Hemorrhage, *The Lancet*, Nov. 15, 1952.

CLINICAL SIGNIFICANCE OF SOME CONGENITAL CHANGES IN THE OPTIC DISK

Arthur J. Bedell, M.D., Albany, N. Y.

Before some of the congenital changes in the optic disk are discussed, it is imperative that the physiological variations be thoroughly understood.[1] The average disk, when measured on the photograph taken with the Nordenson camera, is about 6 mm. in diameter, the largest being just over 9 mm. and the smallest less than 4 mm. It is, therefore, unwise to say that a disk is abnormal simply because it is larger or smaller than the mean, and it is not good practice to ascribe poor vision to the size of the disk.

The disk may be round, oval, irregular in outline, or so narrow that it has a straight temporal margin. When oval, the long axis is most often vertical, although it may be horizontal. It is sometimes difficult to distinguish between the normal and the diseased disk.

The disk is usually paler than the surrounding fundus, but there are so many gradations that the clinician must be on constant guard and never attempt to make a diagnosis of disease solely on the basis of the disk color. To evaluate color correctly at least six things must be considered: the conformation of the disk, especially the thickness of the nasal side; the size of the central excavation; the vascularization, including both the large and small vessels; the pigmentation of the fundus; the border, particularly the scleral and choroidal rings; and the source of light used for the examination. The paler the fundus the less the contrast in disk color. After prolonged exposure in an ophthalmoscopic examination, there is almost invariably some increased disk redness, which is not to be construed as a true congestion. The disk of the normal newborn baby is not as pink as the accepted standard for childhood or adult life. With a more comprehensive understanding of the implications of color the expressions "congestion of the nasal half of the disk" or "slight congestion of the disk" would seldom appear in clinical reports.

Much time could be devoted to the discussion of the central excavation, for it does not follow any special pattern as to size, depth, or location. Some disks have no central excavation, while in others it may be shallow, small, medium-sized, or even large. Additional descriptions are central, eccentric, saucer-shaped, funnel-shaped, tapering, ampullar, or undermining. Arbitrarily I consider a small excavation as a third or less of the disk surface, medium as one-half, and large as three-fourths or more. A physiological excavation rarely extends to the margin of the disk. When the nasal side of the disk is thick and prominent, the cup is often beneath it. Care must be taken in the evaluation of the disk depressions to separate the physiological condition from the pathological. In considering the conformation of the disk, it is essential to remember that it may be flush with the retina, or some portions may be elevated or depressed.

A crescent is an arc of exposed sclera at the margin of the disk. Congenital crescents vary in position but are usually inferior, remain stationary, and are uniformly white, irregularly pigmented, or ridged with pigment. Temporal crescents can be congenital but are oftener acquired.

Pigmentation around the disk ranges from a thin, soft gray collar, which fades into the surrounding structures, to a wide, dense, almost black-gray corona. Pigment on the nervehead is in the form of an isolated, small dot, a thick semicircle, or an irregular deposit. When the deposit is black or very dark and increasing in size, a neoplasm is to be suspected.

It is well known that the retinal vessels are in, on, or beneath the retina and that pulsation of the retinal vein is physiological. The arrangement of the disk vessels and the distribution of the larger branches are in such infinite variety and so individual that it is impossible to classify them into anything like workable groups, although there are instances of four, three, and two major subdivisions in the nervehead. Some of these are of special interest, notably parallel vessels where the artery and the vein may be close together or even in contact. A casual observer may make a diagnosis of an enlarged vein or, if the paralleling is for only a short distance, call it a hemorrhage. A branch of the central artery may be almost completely concealed in the disk so that when it becomes visible it seems to have no connection to any vessel and only by careful scrutiny is it possible to determine its exact source. These are only a few of the innumerable congenital and anomalous vessels.

Cilioretinal vessels are almost always arteries, and with few exceptions are on the temporal side of the disk where a single vessel, or occasionally two, may come from the substance of the disk, loop from near the margin of the central excavation, or curve over the temporal edge. They were found in 10% of 1,000 consecutive patients.

There is no intention of making this short demonstration a discussion on glaucoma, although its prevalence, unknown etiology, difficulty of diagnosis, and the direful results of neglect call for unrelenting attacks whenever and wherever possible. The more concentrated study of the central excavation may give a clue to the earlier changes in this destroyer of sight, and therefore this exposition may suggest a new approach to the solution of the enigma. It is imperative that glaucoma be diagnosed before a pathological excavation of the disk has time to develop.

There is evidence to support the thesis that the cup of increased intraocular pressure will be manifest earlier in the eye with a large depression than in the one without an excavation. In the latter the glaucoma may be far

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Read before the Section on Ophthalmology at the 101st Annual Session of the American Medical Association, Chicago, June 10, 1952.

1. Bedell, A. J.: Atlas of the Fundus Oculi, Philadelphia, F. A. Davis Company, 1929; Clinical Ophthalmoscopy, J. A. Glenn, Albany, N. Y., 1946; The Fundus of the Eye, Ciba Clinical Symposium, Summit, N. J., Ciba Pharmaceutical Products, Inc., 1952.

advanced and intraocular tension high for a long time before there is any of the so-called disk cupping. When a patient has well-established glaucoma in one eye and early changes in the other, it is possible to appreciate the difference in the amount of undermining excavation as the tension increases.

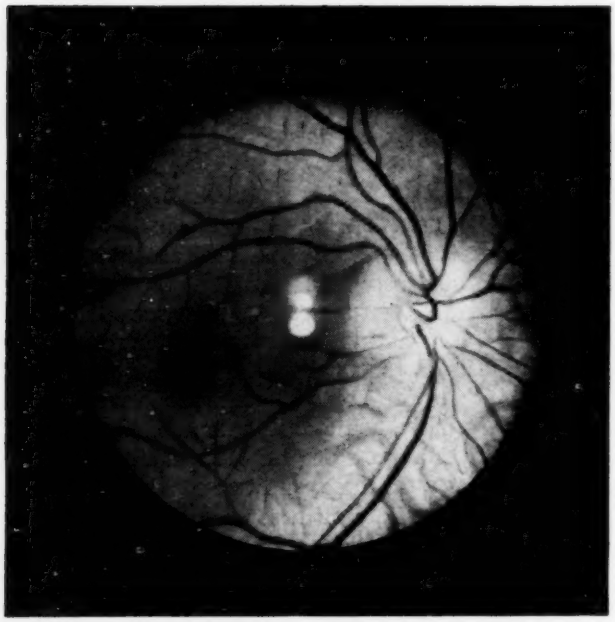

Fig. 1.—An inverted disk. The retinal vessels enter from the temporal instead of the nasal side.

The examiner must know that a large, central excavation, even one to the margin of the nerve, does not of necessity mean that it is the result of glaucoma, for it may be present without glaucoma. This has been recognized in connection with intracranial vessel sclerosis, cavernous optic atrophy, and choroidal channel sclerosis.

In cases of papilledema when the cup is large, it will, by stereoscopic examination, remain evident until the edema has persisted long enough to allow exudate to fill or cover it. When there is no central excavation, it is probable that the expansion of the nervehead and the elevation of the disk appear earlier.

Under certain conditions it is of vital importance to distinguish between genuine and false papilledema or papillitis. One type of pseudochoked disk is easily recognized; the nasal half is decidedly elevated, the whole region of the disk is enlarged, the retinal vessels curve over the smooth margin, and usually the eye is hyperopic. There is much more uncertainty when the disk surface is not expanded and the elevation not extreme, as when the entire disk is raised, the border fuzzy, and the veins full. The greatest confusion is in cases with only slight pallor of a moderately swollen disk. The true pseudochoked disk remains unchanged through life.

It may be that the larger the central excavation the less marked the disk changes in optic neuritis, and it may also be that there is less terminal atrophy. It should not be necessary to state that the diagnosis of inflammation or edema is primarily made on the vision; early visual reduction suggests neuritis.

Drüsen, or colloid masses in the nervehead, may be congenital, although it is well known that they develop in certain degenerative diseases such as retinitis pigmentosa. When the individual collections are small and closely packed together, they suggest a pale choked disk but in most cases a careful analysis will disclose the characteristic, rounded, translucent, yellowish waxen balls or light-colored spheres that make the surface of the disk bumpy and the margin nodular. They do not disturb vision unless they are unusually large, when a scotoma may be present.

Medullation of the optic nerve begins just before birth and spreads forward to reach the lamina at that time or immediately afterward. However, it is significant and common enough to warrant inclusion in this clinical summary, because at times a few fibers suggest localized retinal edema. The retained nerve sheath is a white, cotton-fiber-like mass, with a feathery edge commonly described as a teased-out border. This characteristic margin is diagnostic. The patches are usually on or close to the nervehead, but may be isolated in other portions of the fundus as a single area or several, as a large thin triangle with the apex at the disk, as a sector so uniformly thick and white that it overhangs the disk edge, or as an area so extensive that it completely encircles the disk and extends for some distance above and below the macula as long, arcuate bands.

An arrest in embryological evolution may result in the persistence of Cloquet's canal as a short, faintly yellow-gray knob over the vessels as they converge to the central excavation, or it may be so long that it extends from the disk to the posterior capsule of the lens. It may be invisible until the cellular infiltration of a choroiditis accentuates its outline.

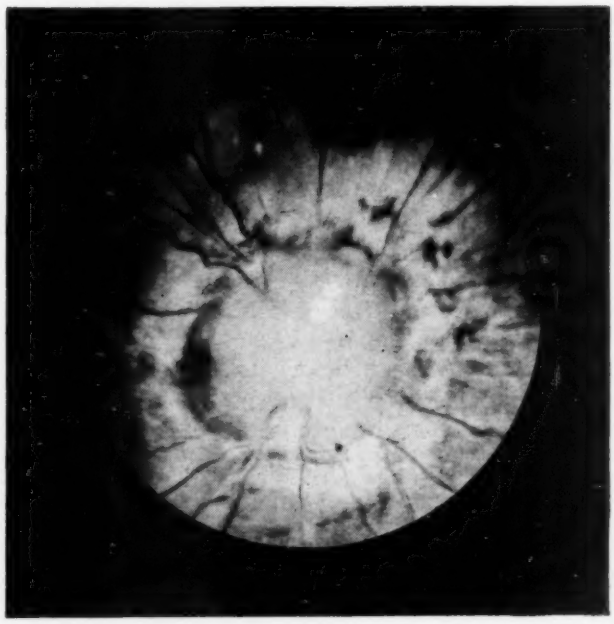

Fig. 2.—Peripapillary ectasia.

In contrast to these tubes are the vestiges of Bergmeister's papilla on or near the central vessels. These almost always emanate on the nasal side of the disk as a nebulous wave, a gray film, a thick white membrane, or diaphanous, blue-gray clouds. Some are so small that they are scarcely perceptible, while others are so large that they actually float in the vitreous. It is not uncommon

to find long, gray, flag-like prolongations and sac-like bags so translucent that the disk vessels are seen through them, vary rarely on them. There are also comparatively rare, thick, white, connective tissue or glial formations that partially cover the disk and project far into the vitreous.

Fig. 3.—"Hole" in the disk, with central serous retinopathy.

A falciform or retinal fold is a curious, flesh-like mass partially covering a distorted disk and extending outward or from the central excavation downward as a furrowed band nearly as wide as the disk. They may be part of extensive degenerations. To distinguish between an acquired change and such a congenital anomaly is sometimes most difficult, particularly when in addition to a distorted disk retinitis proliferans develops and masks some of the underlying details. However, the oval disk, the rounded surface, and the distribution of the retinal veins in an upper and a single lower branch all suggest the congenital nature of the condition.

Every now and then an example of inverted disk is reported as unique. As a matter of record, they are not remarkably rare and are described in the literature under the title of "situs inversus." They are simply tilted disks in which the blood vessels penetrate the nervehead from the nasal side, from below or, least frequently, from above, instead of proceeding in the customary fashion from the temporal side (fig. 1). The transposition may be little or so extreme that only a small portion of the disk remains visible, and the difference in the disk level may be slight or the temporal border may be elevated. In a very lightly pigmented fundus it is sometimes impossible to outline such a disk, and only by tracing the converging blood vessels can its location be definitely established.

The most striking and rarest of congenital disk defects is its complete absence. A seldom observed clinical condition is aplasia, when the disk is small and deformed, with marked reduction in visual function.

A common anomaly is coloboma of the disk, the choroid, or both. This may be a narrow sulcus near the inferior margin, a great ovoid depression, or an absence so great that the only suggestion of a disk is the converging blood vessels at the upper margin of an immense posterior, bulging, white oval. A true disk coloboma is an absence of part of the nervehead within the scleral sheath. This must not be confused with peripapillary ectasia, in which in the bottom of a large, deep hole the retinal vessels converge to a normal disk (fig. 2). The diagnosis is sometimes difficult and can be accurately determined only by stereoscopic investigations.

With the loss of the lower two-fifths of the disk, there is a displacement of the inferior temporal vein. The upper one-third of the disk may contain the major blood vessels, or they may be in the upper two-fifths of a very large, pale coloboma of the disk, or the disk area may be three times its normal size, with the vessels lost to view at the outer rim of the great depression.

The disk in peripapillary ectasia is deep in a hole surrounded by irregular clumps of pigment and a crinkled depigmented, broad ring. The retinal vessels roll over the rim beneath a soft-gray film, and only with great effort can they be seen on the disk. A few cases of bilateral coloboma have been reported.

"Holes" in the disk are small, bluish or dark gray, round or oval, translucent or transparent, depressions near the margin; they are usually in the temporal portion and are not connected with vessels. They are of no clinical significance when correctly diagnosed, but on more than one occasion disasters have been threatened by the lack of appreciation of their true congenital nature. In one instance, a 31-year-old man was discharged from the Navy because of the condition.

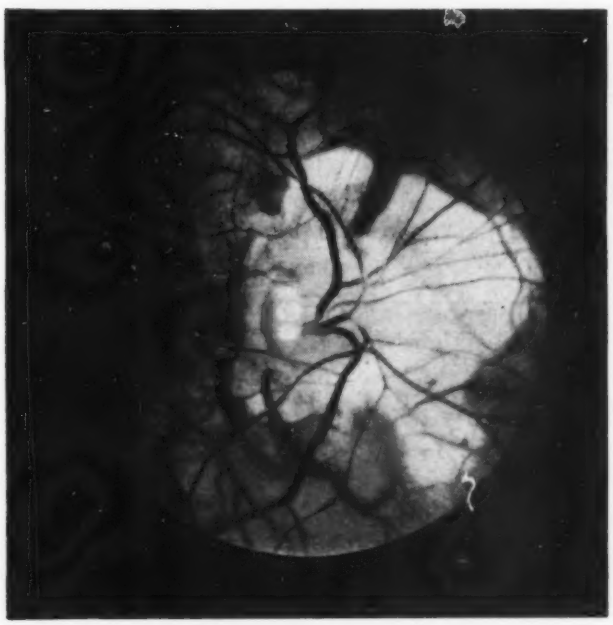

Fig. 4.—Posterior vortex veins in myopia.

In another a near tragedy was averted. A 27-year-old woman who had delivered a normal baby two months previously had been told that she had a growth in her eye and that the globe should be removed. Following mild conjunctivitis she noted cloudy vision in her left eye, and the examinations made by her other physicians led them to advise enucleation. The disk was almost perfectly

round, with a shallow central excavation (fig. 3). In its temporal portion near the margin there was a dark gray, vertical oval, about one-fifth disk diameter long, with a narrow scleral arc. Close to the upper and lower edges of this gray spot two small retinal arteries were traced. The macular region was a large, slightly translucent elevation, a serous retinopathy. The swelling and the gray oval had been ascribed to a growing tumor. The eye was not removed. These two cases are evidence of the need of a more widespread appreciation of the benign nature of these dark ovals that are still called "holes."

In contrast to these easily recognized defects is one caused by connective tissue or glial formations extending over the disk, with a clear pink center and a gray edge suggesting a loss of nerve tissue, a pseudo "hole" in the disk.

In posterior staphyloma the margin of the disk is often sharp and clearly distinguished from the depigmented, sunken depression. There is no doubt that staphyloma is occasionally a congenital defect, although it usually develops in the course of progressing myopia.

The choroid circulation is best seen in myopia because of the general fundus depigmentation. It is worthwhile to examine a few cases in which the anomalous posterior vortex veins are close to or impinge on the disk before disappearing into the nerve sheath (fig. 4). They should not be confused with hemorrhage. Congenital anomalous fundus vessels include tortuous arteries and veins as well as extremely large ones.

SUMMARY

The study of the physiological variations in the size, color and general configuration of the optic disk establishes their wide diversity in nature. The relations of the central excavation to the early diagnosis of glaucoma, papilledema and papillitis are alluded to. The anomalies discussed include medullated nerve fibers, remnants of Cloquet's canal, vestiges of Bergmeister's papilla and unusually large residues, falciform folds of the retina, pseudochoked disks, inverted disk, "holes," or, as Greear in his excellent resume calls them, "pits in the disk," some staphylomas, posterior vortex veins in or close to the margin of the scleral rim, and congenitally abnormal vessels.

344 State St.

MANAGEMENT OF OSTEOARTHRITIS IN THE AGED

John G. Kuhns, M.D., Boston

Osteoarthritis can be found in the joints of all persons over age 50.[1] Roentgenograms will usually show steady progression of this osteoarthritis throughout the remainder of the patient's life. Fortunately, in most persons symptoms will not be commensurate with the roentgenological appearance of the joints. About 1 person in 10 will have pain and disability of sufficient severity to cause him to consult his physician.[2] Persons who require treatment for osteoarthritis will present symptoms of from mild stiffness in the morning and pain after prolonged activity to constant pain and inability to walk when the large weight-bearing joints are seriously affected. With good medical care, these symptoms can be relieved. Moreover, serious disability occasionally can be corrected by surgical procedures. Comfort is the chief aim of therapy in those over age 65, who will have, on the average, 13 more years of life.

DIAGNOSIS

It must first be determined that only osteoarthritis is being dealt with. While other types of arthritis are not common in the aged they must be considered in every instance. The diagnosis of osteoarthritis is made from a long history of mild articular and muscular symptoms slowly increasing in severity.[3] Symptoms are usually confined to one or a few joints. There is absence of heat and redness about the joints. There is no change in the general condition of the patient. The blood will show no abnormality, and the erythrocyte sedimentation rate will be normal. Often there will be painless enlargement about the terminal interphalangeal joints, the so-called Heberden's nodes. The x-ray picture will show normal bone texture, narrowing of the joint space, slight irregularity of the articular surface, and slight or no soft tissue swelling. About the margins of the joint will be bony proliferation of varying degrees, the characteristic spurs or nodes of osteoarthritis (fig. 1).

CAUSES

The causes of osteoarthritis are still uncertain. The disease consists partially of a degeneration of the articular structures and also of the other supportive tissues. Some of this is an expression of the gradual aging of the body. Injury, especially oft-repeated mild trauma, postural strain, laborious work, and obesity exert a mechanical influence on the progression of the disease. A rapidly progressive type, called secondary osteoarthritis, is seen in the presence of severe disalignment of the joint from previous injury or disease (fig. 2). Infection does not seem to be a cause, but symptoms often become severer when acute infection is present and lessen when the infection subsides. Endocrine dysfunction may play a part, especially when symptoms first appear at the time of the male or female climacteric. With this meager knowledge of the causes of osteoarthritis, its management must be chiefly symptomatic.

The pain and disability of osteoarthritis arise chiefly from three conditions: ligamentous sprains, impingement of tissue within or about the joint, and irritation of nerve roots at the intervertebral foramina. Ligamentous sprain

From the Robert Breck Brigham Hospital and the Boston Home for Incurables.

Read before the Section on General Practice at the 101st Annual Session of the American Medical Association, Chicago, June 11, 1952.

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2. Waine, H.: Nature of Degenerative Joint Diseases, Ann. West. Med. & Surg. **2**: 313, 1948.
3. Hall, R. D. M., and Wade, B. G., in Symposium on Osteoarthritis, Section of Orthopaedics and Physical Medicine and Section of Radiology and Radiotherapy, Australasian Medical Congress, Perth, Australia, August, 1948, abstracted in M. J. Australia **2**: 360, 1948.

arises from the overstretching of the supporting ligaments of the joint. In the presence of spurs about the joint, sudden or vigorous movement can readily cause excessive pull or sprain in these ligaments. This occurs oftenest with rapid and prolonged exertion. Impingement is most commonly a pinching of synovial tissue between joint surfaces or between the bony spurs about the joint. Bony spurs and articular cartilage have no nerve endings, but the synovial membrane is sensitive, and injury to it leads to articular effusion and other acute symptoms. Less commonly, loose bodies or degeneration of the semilunar cartilage are the cause of the impingement. Irritation of nerve roots at the intervertebral foramina of the spine is made possible by the bony proliferation there (fig. 3). Symptoms may result from stretching or pressure on the nerve. The pain is referred to the cutaneous distribution of the nerve and sometimes is difficult to diagnose.

The symptomatology of osteoarthritis is often colored by the physiological and psychological disturbances that accompany old age. Insight and patience are necessary to avoid too much passive acquiescence in disability on the one hand and enthusiastic overtreatment on the other. Treatment need not necessarily be palliative. While comfort is the chief aim, function also can be improved. Many factors that contribute to the severity of the osteoarthritis can be eliminated. Obesity can be lessened. Work can be made less strenuous; rapid, repetitive movements especially should be avoided. Faulty posture with its muscular and articular sprain can be improved. Simple measures usually are adequate. These measures can be divided into (*a*) medical measures, (*b*) physiotherapy, (*c*) orthopedic measures, and (*d*) surgical measures.

MEDICAL MEASURES

Medical measures include the use of sedatives, tonic measures, hormones, and dietary measures.[4] Specific medication has often been tried in attempts to cure the disease, but always in vain. The same can be said of

Fig. 1.—Roentgenograms of osteoarthritic knees of a 62-year-old patient; note the spur-like projections at the lateral margins of the condyles.

cortisone and hydrocortisone. They have given only temporary relief and have not changed the pathological alteration in the joint or lessened the deformity. Intra-articular injections of hydrocortisone have resulted in temporary relief of pain and stiffness in about two-thirds of the patients.[5] Injections of local anesthetics or lactic acid [6] have given little, if any, relief. Vaccines and gold salts have no known therapeutic effect in osteoarthritis. Sedatives are sometimes needed for pain, especially after overuse of the joint. Acetylsalicylic acid or sodium salicylate given several times a day is usually adequate. If narcotics are required repeatedly, other diseases should

Fig. 2.—Roentgenogram of hip showing secondary osteoarthritis following faulty development of the acetabulum in a 37-year-old patient.

be sought. Malignant disease occurs often in the presence of osteoarthritis in the aged (fig. 4).

The patient with osteoarthritis usually is well nourished. Tonics (dilute hydrochloric acid, hematinics, strychnine, potassium iodide, and vitamins) are not often required. Administration of dilute hydrochloric acid is of value when hypochlorhydria is present. Some physicians give vitamin B complex, liver extract, and potassium iodide, but the basis for their use is wholly empirical. Administration of multiple vitamin capsules is probably indicated, since the diet of the old person is often inadequate, and vitamin deficiencies are common. Hormones are helpful at times. Thyroid is given in appropriate dosage if there is a lowered basal metabolic rate. The need for estrogens or testosterone is difficult to measure. In women with menopausal symptoms or osteoporosis, estrogenic substance should be given until these are controlled. Hormones have much less value in old age than in earlier periods of life. In osteoarthritis, the caloric intake must be decreased oftener than it is increased, and the diet should be high in protein, moderate in fat, and low in carbohydrate, with adequate minerals. It should usually include milk, whole grain bread and

4. Bayles, T. B.: Symposium on Specific Methods of Treatment: Hypertrophic Arthritis (Degenerative Joint Disease), M. Clin. North America **34**: 1435, 1950.

5. Hollander, J. L.; Brown, E. M., Jr.; Jessar, R. A., and Brown, C. Y.: Hydrocortisone and Cortisone Injected into Arthritic Joints: Comparative Effects of and Use of Hydrocortisone as a Local Antiarthritic Agent, J. A. M. A. **147**: 1629 (Dec. 22) 1951.

6. Waugh, G.: Injection Treatment of Osteoarthritis, abstracted, Brit. M. J. **2**: 95, 1948.

cereals, fresh fruit, vegetables, meat, and eggs. Rarely must a bland diet be prescribed. There should be an adequate fluid and bulk intake. In diet and in water intake the older patient is careless, and deficiencies will occur unless the diet and liquid intake are constantly watched.[7]

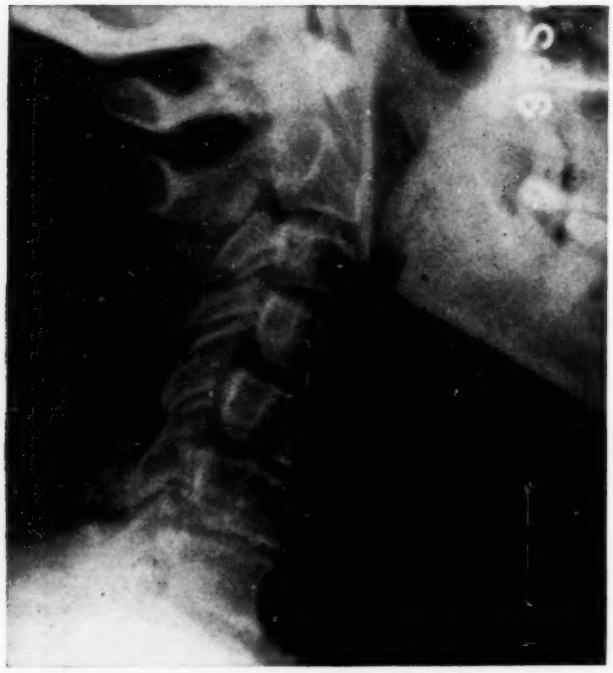

Fig. 3.—Roentgenogram of cervical spine with severe osteoarthritis; the intervertebral foramina are narrowed, and the intervertebral disks are degenerated.

PHYSIOTHERAPEUTIC MEASURES

The chief physiotherapeutic measures employed are rest and heat. Temporary subsidence of symptoms can be secured in almost all instances by complete rest [8] of the involved joints. This may require rest on a firm bed for several days or merely lessening of activity with support to the painful joint. When soreness recurs quickly, some form of support that prevents much of the minor trauma and strain is prescribed. Activities of all kinds are not forbidden; they are simply done less strenuously and for shorter periods. Warmth in all forms seems to be beneficial to osteoarthritis.[7] This includes warm clothing, houses that are kept comfortably warm, and warm bed clothing at night. This type of arthritis responds favorably to a warm climate and shows increased stiffness with cold. The simple forms of heat are helpful for the involved joints and, in my experience, are as effective as the more elaborately administered forms.

The amount of heat necessary depends on the size of the joint and its depth from the surface of the body. For the smaller joints of the extremities, heat applied for 20 minutes two or three times a day is adequate. For the back or hip, heat should be applied for 30 to 40 minutes at one time. This heat should be at the highest temperature that can be borne comfortably by the skin. It can be given with a hot water bottle, electric pad, or baking lamp. Constant application of heat to the joint is no more effective. Physiological changes secured from heat do not disappear for several hours. A number of physicians use liniments or rubefacients. Such mild counterirritants, when used after application of heat on a joint, prolong the sense of warmth in the joint and are often mildly sedative as well.

The more vigorous forms of spa treatment and Turkish baths usually are too strenuous for the aged; however, a warm bath or shower in which the patient remains for about 10 minutes is often helpful. Prolonged hot baths are debilitating and should not be taken by the older patient more than twice a week. Massage, stroking, and gentle kneading are of value over the muscles about the inflamed joint. Vigorous massage should never be given over osteoarthritic joints. Massage should never supplant exercise, even in the aged patient. As soon as the acute soreness in the joint has subsided, exercises should be given in place of massage. Such exercises should not be strenuous or long-continued. It should begin with setting of the muscles about the joint and should proceed to active motion of the joint, including as full a range of motion as is possible without pain. Deep breathing and postural exercises should also be given. These should be continued for at least a month. Exercises should be mild and should never cause fatigue or pain.[8]

X-ray treatment is sometimes of value in the larger painful joints when there is persistent swelling and constant pain. Its effects are not predictable. It is helpful in severe osteoarthritis of the spine. It is used at the knee, hip, shoulder, and elbow. Fifty to 100 r are given about twice weekly until 750 to 1,000 r have been given. In most instances swelling will decrease and pain will lessen. The mechanism involved is not known.[9]

Fig. 4.—Roentgenogram of pelvis of a 68-year-old patient showing osteoarthritis of the hips; there is also extensive sclerosis of the bone in the pelvis and femur from metastatic carcinoma of the prostate.

ORTHOPEDIC MEASURES

Most of the symptoms in osteoarthritis have a mechanical basis and can often be relieved most effectively by mechanical, orthopedic means. Support to the painful joint is almost always indicated. The amount of support will vary with the severity of the symptoms. In arthritis in the spine, this can best be given by a firm bed, which

7. Short, C. L., and Bauer, W.: Medical Progress: Treatment of Degenerative Joint Disease, New England J. Med. **225**: 145, 1941.

8. Fletcher, E.: Osteoarthritis and Its Treatment, Brit. J. Phys. Med. **11**: 136, 1948.

9. Kuhns, J. G., and Morrison, S. L.: 12 Years' Experience in Roentgenotherapy for Chronic Arthritis, New England J. Med. **235**: 399, 1946.

should be used throughout the patient's life. When the patient is out of bed a brace or jacket may be required temporarily. In other joints, an elastic cotton bandage, a brace, or a cast may be needed to relieve symptoms. If much damage has occurred to the joint and symptoms quickly return after rest, support may be required when the patient is active for the rest of his life.[10]

Every factor that aggravates strain and irritation to the joint should be removed if possible. Faulty posture is one of the chief of these and is always worse in old age. Improvement in posture comes very slowly in the aged. Usually, supports for the low back and the abdomen are necessary. A corset or a spinal support may be used for this. Good shoes with arch supports for the feet are sometimes used to secure good balance of the foot and knee. They are used especially to aid balance and to prevent strain in osteoarthritis of the knee. The patient is encouraged to sit in a straight-backed chair. A non-sagging firm bed should be used, with only one small pillow, if possible. If there is difficulty in breathing when lying down, the entire upper portion of the bed should be elevated 20 to 30 degrees. This is preferable to the use of pillows under the head, since this adds to the strain on the neck and upper back and aggravates the arthritis.

When the symptoms of osteoarthritis are acute, a subsidence of symptoms is seen most quickly after the use of a snug-fitting plaster cast. Such casts are worn for about two weeks, and may consist of a body jacket, a spica for the hip, or a circular cast for an upper or lower limb. Traction instead of a plaster cast can be used effectively in two areas, the cervical spine and the lower extremities. It is oftenest used for nerve root pain from osteoarthritis in the cervical spine. When there is severe damage in the lower extremity, crutches temporarily prevent much strain on the joints and also prevent pain. They are used until weight can be borne more comfortably.

SURGICAL MEASURES

Surgery is employed less often in treating osteoarthritis in aged patients than are medical, orthopedic, and physiotherapeutic measures. There are many conditions in the joints that can be improved surgically, but the aims of treatment in the aged are comfort and safety. No attempt is being made to rehabilitate these persons for gainful employment.[11] Before surgical therapy is attempted, these questions should be asked: Does the general condition of the patient and the state of his musculature suggest that the operative procedure is safe and feasible? Will the operation add to his comfort and increase his activities? If the answers are negative, only conservative measures should be used. If the answers are yes, there are many surgical procedures that may add to the patient's comfort and usefulness. In osteoarthritis surgery is used most frequently at the hip and knee joints. It is used rarely for osteoarthritis in the upper extremity; this has been done, in my experience, only for removal of large bony spurs or for treatment of inflamed bursae.

In the cervical spine, when traction and support fail to quiet neuritis from nerve root pressure, neurological and myelographic examinations are indicated. If severe pressure on a nerve root is found, it should be removed as simply as possible, usually by a simple foraminotomy, unroofing the bony overgrowth about the foramina to relieve the pressure. In the lumbar region, pain and sciatica sometimes require neurological study. Intervertebral discs degenerate and at times herniate without obvious trauma. When rest and support to the lumbar spine fail to quiet the symptoms and there is evidence of pressure on nerves, laminectomy is indicated, with removal of the ruptured disc. Surgical fusion following laminectomy is not indicated in these older persons.

Surgery is required oftener in the lower extremity than in any other area in elderly patients. The joints that usually show severe disability are the hip and knee joints. The hip joint produces the most pain and crippling. Surgery is indicated to make comfortable walking and sitting possible. The surgical procedures considered for treatment of the hip joint are obturator neurectomy, arthrodesis, and arthroplasty. Obturator neurectomy, the cutting of the sensory nerves to the articular capsule, is purely palliative; it lessens the pain, but does not improve motion. It is reserved for the elderly patient who will not walk much. Arthrodesis, stiffening of the hip joint, can be carried out with little shock or trauma by driving a long triflanged nail through the femoral neck into the acetabulum and ilium. It relieves the pain in the hip, but it is difficult for the aged person to adjust to the awkwardness attending inability to move the hip. If the patient can undergo a major surgical procedure despite his age, he will usually get comfort and greatly increased motion from an operation in which the deformed femoral head is replaced with a plastic prosthesis.[12] A number of conditions requiring surgery arise in the osteoarthritic knee. The commonest is internal derangement caused by a hypertrophied synovial villus, a degenerated meniscus, or the catching of a loose body between the joint surfaces. If symptoms persist, arthrotomy is indicated. Debridement, with removal of the thickened synovial tissue about the joint ends, loose bodies, bony spurs, or degenerated semilunar cartilages, can be carried out without use of a tourniquet. Arthroplasty or arthrodesis of the knee are almost never procedures of choice in the aged. Patellectomy or simple removal of a spur from an articular surface is rarely adequate for treatment of osteoarthritis.

Surgical treatment of the foot, except for the toes, is rarely done. Most patients can be made comfortable with proper shoes and sometimes with foot supports. In the presence of severe hallux valgus, hallux rigidus, or hammer toe deformity, the same indications rule as in younger patients. If conservative measures fail, simple but adequate surgery is carried out. Elderly patients are usually kept in bed for at least a day or two before the operation while their blood and their cardiorenal systems are evaluated. The anesthesia is usually spinal, supplemented with thiopental (pentothal®) sodium or nitrous oxide when required. Transfusions are given if there has been appreciable blood loss. The patients get out of bed or move about in bed the day after operation. Breathing exercises are given to avoid pulmonary and venous complications.

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10. Enslin, T. B.: Osteoarthritis: Orthopedic Aspects of Treatment, South African M. J. **23**: 671, 1949.
11. Kuhns, J. G.: Medical Progress: Surgery in Chronic Arthritis, New England J. Med. **240**: 605, 1949.
12. Judet, J., and Judet, R.: The Use of an Artificial Femoral Head for Arthroplasty of the Hip Joint, J. Bone & Joint Surg. **32B**: 166, 1950.

COMMENT

In the aged person the symptoms of osteoarthritis often seem out of proportion to the clinical and roentgenological findings. Elderly patients with rheumatoid arthritis show some osteoarthritic bony proliferation about the margins of the joint. After a definite diagnosis has been made, the physician should examine the patient's occupation and home. Little progress in relieving symptoms can be expected until a favorable environment has been created for the patient. Worry and apprehension always make symptoms worse. With proper care, the patient may continue as an active worker in the community. The physician should assume an attitude of optimism and encouragement. Progress takes place slowly in these older patients. Simple measures are usually effective in relieving symptoms. The physician must individualize treatment according to each patient's needs.

SUMMARY

Osteoarthritis is found in all elderly persons, but symptoms requiring medical care are found in only 10%. Symptoms arise in osteoarthritis from sprains, impingement, and irritation of nerve roots. These symptoms can be relieved by simple medical, physiotherapeutic, orthopedic, and surgical measures.

372 Marlborough St. (15).

CONSERVATIVE MANAGEMENT OF FRACTURES OF THE ANKLE INVOLVING THE MEDIAL MALLEOLUS

Robert B. Portis, M.D.
and
Howard A. Mendelsohn, M.D., Beverly Hills, Calif.

There has been an increasing tendency among orthopedic surgeons to submit fractures of the medial malleolus of the ankle joint to open reduction and metallic internal fixation.[1] This method has been used, in many instances, without any serious attempt at closed reduction. It has been our belief for many years that the vast majority of fractures of the ankle involving the medial malleolus can be adequately reduced and satisfactorily maintained by closed manipulation and plaster of Paris fixation.

The basic requirement for an acceptable reduction of such fractures is placement of the talus beneath the tibia in such a position that it has no lateral or medial displacement, it has no rotation relative to the tibia, and it is not displaced anteriorly or posteriorly. In figure 1 the cortex of the superior articular surface of the body of the talus has been set parallel to and properly spaced from the corresponding articular surface of the distal extremity of the tibia.[2] If this parallelism does not exist, there is probably a residual subluxation of the talus. The position of the malleoli, in their relation both to the talus and to the main fragments of the tibia and fibula, is another important consideration. The postreduction roentgenograms should ideally reveal a normal joint mortise. A type of displacement of the medial malleolus that is frequently regarded as unacceptable is shown in figure 2. The malleolar fragment is rotated in such a manner that there is separation at the fracture site anteriorly. A gap of varying degree may be clearly demonstrated. There is usually bony contact of the fragment posteriorly. This situation does not necessarily preclude bony union, and, even if fibrous union should occasionally occur, late disability need not follow. Failure of bony union may be related to the degree of separation of the malleolar fragment, but there are no precise measurements on which one can rely for prognosis in this regard. In the presence of a satisfactory tibiotalar relationship we believe that the vast majority of fractures involving the medial malleolus should not be subjected to open surgery.

TABLE 1.—*End Results of Patients Who Underwent Therapy for Fractures of the Ankle Involving the Medial Malleolus*

Acceptable	Not Acceptable *
1. The patient returns to usual or normal activity.	1. Pain is present, severe enough to be disabling, and frequently increasing in intensity. These patients usually present significant post-traumatic arthrosic changes in the roentgenogram.
2. Pain, if present, is mild, infrequent, and nondisabling.	2. There is restriction of motion severe enough to interfere with normal function.
3. On physical examination, the ankle has stability and range of motion sufficient for normal function.	3. There are such complications as malunion, infection, gross displacement of the foot on the leg, unsightly or tender scars, and mutilating surgical procedures, which include removal of important segments of bone.
4. There is no gross deformity on inspection.	

* Instability of sufficient degree to be disabling has not been encountered in this series.

In attempting to evaluate our past experiences in relation to this controversial problem, we have personally reviewed 54 cases of fractures of the ankle involving the medial malleolus. Of these cases 27 were taken unselected from the files of the orthopedic service of the Wadsworth General Hospital from September, 1946, to June, 1951. The remaining 27 cases were unselected patients from our private practice from February, 1943, to May, 1951. The end results were classified simply as acceptable and not acceptable (table 1). Table 2 shows

From the Orthopedic Service, Wadsworth General Hospital, Veterans Administration Center, Los Angeles.

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Reviewed by the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions of the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

1. (*a*) Muller, G. M.: Fractures of the Internal Malleolus, Brit. M. J. **2**: 320 (Sept. 8) 1945. (*b*) Bonnin, J. G.: Injuries of the Ankle, New York, Grune & Stratton, Inc., 1950. (*c*) McLaughlin, H., and Ryder, C. T., Jr.: Symposium on Recent Advances in Surgery: Open Reduction and Internal Fixation for Fractures of the Tibia and Ankle, S. Clin. North America **29**: 1523-1534 (Oct.) 1949. (*d*) Lee, H. G., and Horan, T. B.: Internal Fixation in Injuries of the Ankle, Surg., Gynec. & Obst. **76**: 593-599 (May) 1943.

2. Watson-Jones, R.: Fractures and Joint Injuries, ed. 3, Baltimore, Williams & Wilkins Company, 1952, vol. 1.

the results of our survey of the total group of 54 cases, of which 47 were suitable for adequate end result study. Several cases with only three months follow-up were included because their results were considered excellent at the end of that period. All of the cases considered unacceptable were followed for at least 36 months, with the exception of two cases in which ankle fusion was performed at 12 months and 32 months, respectively, and one case in which excision of the entire medial malleolus was done. The result of open reduction in these three cases was considered unacceptable.

The total number of cases is too small for significant statistical analysis, but the following observations may be made with respect to table 2. The age incidence had little to do with the result in fractures involving the medial malleolus. The acceptable results in cases treated by closed manipulation were evenly divided between those in which only the medial malleolus was fractured and those in which there were multiple malleolar fractures. No fracture of the medial malleolus alone had an unacceptable result whether treated by open or closed methods. The level of fracture in the medial malleolus has no apparent correlation with the end result in this series. It might be expected that the results in fractures below the joint level would be better than those at or above this level. Actually there is no significant difference in the number of acceptable and nonacceptable results of fractures of the medial malleolus at any particular level.

The three cases that were not acceptable after open treatment are of special interest. In two of these, which were opened immediately without any attempt at closed reduction, the malleolar fragment was not suitable for internal fixation and was resected. One of these cases resulted in a painless stable ankle at eight months because the fracture was well below the joint level and an adequate medial buttress remained. Nevertheless, we felt that the resulting resection of bone was not a desirable result of treatment. In the other case of resection of the medial malleolar fragment a part of the medial malleolus has regenerated. The patient has a painless ankle but markedly limited dorsiflexion and a tender scar. In a third case resection of the medial malleolus became necessary as a result of infection following open reduction with screw fixation. The metallic screw and affected bone were removed. An ankle fusion was necessary after 32 months. In one case open reduction of the medial malleolus in a bimalleolar fracture was done with pinning of the malleolus by two Kirschner wires. There was clinical and roentgenographic nonunion of the medial malleolus at four months, with ankle pain and swelling. This case cannot be considered in our analysis because the follow-up is too short, but the clinical result, even at this time, was definitely not satisfactory.

The unacceptable results of closed treatment reveal only one in which the difficulty can be assigned directly to a medial malleolar fracture at joint level. In this case a nonunion developed following what we have considered insufficient immobilization. Five years later a bone grafting procedure was performed with subsequent union. The patient now has a stable and useful ankle with very little discomfort but with limited dorsiflexion. Severe posttraumatic osteoarthritis and fibrous union developed in one patient, following an unstable trimalleolar fracture that was immobilized inadequately by a below-the-knee plaster boot. The fragments were allowed to slip out of position with loss of an initially satisfactory reduction. Ankle fusion was eventually necessary. In one case there was mild posterior subluxation of the talus in a trimalleolar fracture with a large posterior lip fragment of the tibia. In another case the fracture consisted of an avulsion of the joint surface and underlying bone of the medial malleolus with a resulitng persistent loose body within the joint. The fifth poor result occurred in a bimalleolar fracture with additional fracture of the body of the talus extending into the articular surface of the ankle joint. The separate fragment of the talus underwent aseptic necrosis with mild malunion. The ankle mortise was, however, reestablished, and there was solid union of the medial malleolus in a satisfactory position.

Obviously, if all fractures of the ankle could be anatomically reduced and maintained by the closed method, there would be no controversy concerning open or closed treatment. Therefore, it is appropriate at this point to discuss some of the more important aspects of the closed treatment. The maintenance of the reduced fractures in alignment after manipulation would seem to be a major problem in the closed management of fractures involving the medial malleolus. Where rotation is a factor, the plaster should be carried above the knee with the knee partially flexed. This long leg plaster should be maintained for approximately six weeks and be followed by a below-the-knee plaster boot for at least four weeks. The exact duration of immobilization can be varied in accordance with the roentgenographic appearance. If the original manipulation is not successful, remanipulation is always recommended. Regarding the use of protective materials beneath the plaster, it is desirable to use as little padding as is consistent with safety. We have used

TABLE 2.—*Analysis of Forty-Seven Unselected Cases of Fractures of the Ankle Involving the Medial Malleolus*

Manipulation	No. of Cases	Age Incidence	Medial Malleolus Only	Bi-malleolar	Tri-malleolar	Initially Severe Dislocation of the Talus	Oblique Above Joint Level	Transverse at Joint Level	Below Joint Level	Nonunion of Medial Malleolus
Closed										
Acceptable	32	15-72	11	10	11	11	16	16	0	0
Not acceptable	5	27-62	0	3	2	2	3	2	0	2
Open										
Acceptable	7	21-59	2	4	1	0	0	5	2	0
Not acceptable	3	22-76	0	3	0	0	1	1	1	0
Total	47		13	20	14	13	20	24	3	2

stockinette and felt pads over bony prominences and potential pressure points and have attempted to mold the plaster carefully over the malleoli and foot.

One of the reasons for difficulty in reducing ankle fractures is excessive swelling about the joint. Subsequent immobilization in these cases is difficult because the

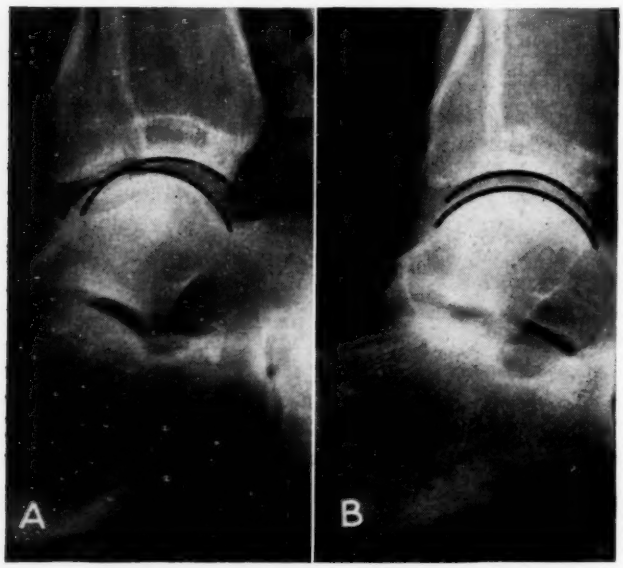

Fig. 1.—*A*, residual posterior subluxation of the talus and *B*, restored parallelism as a result of reduction of the posterior subluxation of the talus.

swelling soon disappears, the plaster becomes loose, and the reduction may be lost. Excessive swelling may be diminished in massaging the ankle after reduction of any major dislocation and before attempting more minute

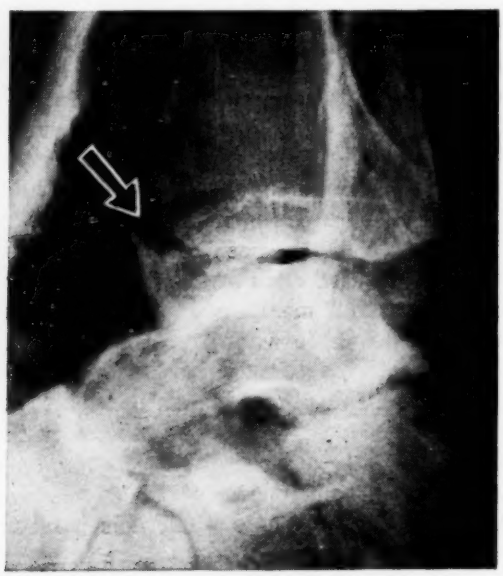

Fig. 2.—Anterior separation of the medial malleolar fragment.

replacement of the fragments. Following this procedure the loose fragments may be more easily palpated and a more closely fitting plaster bandage applied. If there is evidence of inadequate immobilization owing to further decreased swelling, a new plaster should be applied.

In fracture dislocations of the ankle we have found that the reduction of the main displacement of the talus can best be performed with the patient supine on a table or cart. The patient is properly anesthetized, and the affected lower extremity is permitted to hang over the edge of the cart or operating table with the knee partially flexed. The operator is seated and rests the patient's foot on his knee. In this position the patient's Achilles tendon is somewhat relaxed and the body weight on the table provides good countertraction. Care must be exercised to

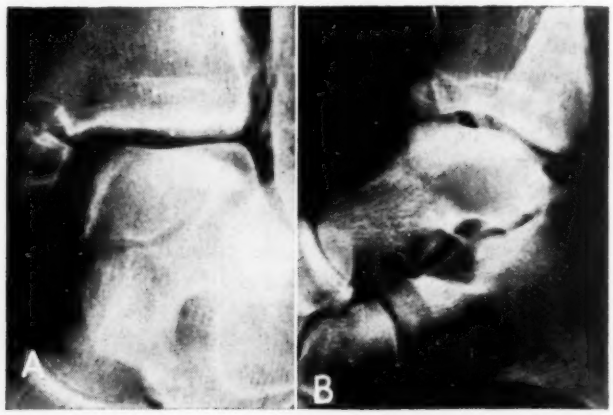

Fig. 3.—*A* and *B*, 10-year-old nonunion of a fracture of the medial malleolus without disability.

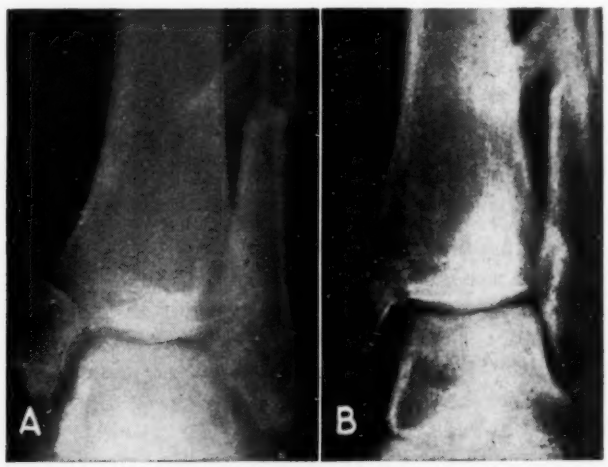

Fig. 4.—*A*, apparent delayed union of the medial malleolus three months after fracture and *B*, complete obliteration of the fracture line three years later.

protect the posterior structures of the thigh from prolonged pressure. Frequently a satisfactory reduction, once obtained, is lost during the application of the plaster. Where considerable instability exists the following method may be of benefit: The major reduction of the displaced talus is first accomplished. The plaster is applied from the mid thigh to above the ankle, with the knee partially flexed. After the plaster has set, the reduction is completed and the plaster continued over the foot.

The clinical significance of fibrous union of medial malleolar fractures is debatable. The assumption [1d] that all such fibrous unions are bound to be painful and lead to instability of the ankle joint, especially after strenuous usage, is in error. The roentgenograms * shown in figure 3 are those of a 40-year-old laborer who injured his ankle 10 years ago. Treatment consisted of closed reduction

* The roentgenograms in figure 3 were supplied by Dr. Lewis Cozen, Los Angeles.

and external immobilization. When he recently consulted Dr. Cozen for an unrelated complaint, nonunion of the medial malleolus was evident. The ankle was stable, painless, had a normal range of motion, and did not interfere with his work. There are many reasons for ankle pain following fracture. These may include malalignment of the tibiotalar relationship, extensive damage to the articular cartilage, and derangements of the distal tibiofibular joint.[3] In our experience, and the experiences of many orthopedic surgeons whom we have questioned on this point, one rarely sees a nonunion of the medial malleolus of three years' duration or more that is a primary cause of disability following an adequate reduction and immobilization, and for which the patient will voluntarily present himself for treatment. There is frequently some degree of pain in an ankle that has been the site of severe injury for a year or two after the onset. If an acceptable reduction has been obtained, the pain usually subsides in time. Some discomfort is often present for many months, even in medial malleolar fractures that have solidly healed in excellent position. It has been stated that if nonunion is likely to occur, open reduction must be performed at once. If it is delayed, osteoarthritis is inevitable in spite of subsequent osteosynthesis of the medial malleolus. We know of no valid statistical studies supporting this view. In fractures of the medial malleolus, bony union may be delayed for many months as demonstrated by a clearly visible fracture line in the roentgenogram. Months or even years later the fracture line may have become completely obliterated (fig. 4).

A physical finding of considerable prognostic significance in instances of apparently delayed union is the presence of stability of the talus in the joint mortise. When the ankle joint feels stable, the persistence of a radiographically demonstrable fracture line is not in itself an indication for surgery. Many open reductions of the medial malleolus have been performed to preserve stability when stability is not really a problem. To be a source of instability, a fracture of the medial malleolus must be at least as far proximal as the superior surface of the talus. If a greater or smaller stump of medial malleolus remains, it will provide adequate buttressing against which the talus may be aligned during manipulation. Even in the presence of nonunion at a more distal level in the medial malleolus, the stump still forms an adequate buttress to prevent medial migration of the talus during weight bearing.

A surgeon properly prepared to treat all fractures of the ankle must be capable of performing both closed and open procedures. But, generally speaking, we believe that fractures of the ankle involving the medial malleolus are best treated by closed manipulative reduction and adequate plaster of Paris immobilization.

SUMMARY

1. Fifty-four cases of fractures of the ankle involving the medial malleolus have been reviewed and 47 analyzed.

2. The vast majority of such fractures can be successfully managed by closed methods.

3. Nonunion of the medial malleolus can be present in a stable, painless ankle.

4. There are many causes for disability following fractures of the ankle. Careful evaluation is necessary before resorting to operative treatment.

450 N. Bedford Dr. (Dr. Portis).

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PUBLIC HEALTH ASPECTS AND PREVENTION OF BRONCHOPULMONARY DISEASE

Walter Finke, M.D., Rochester, N. Y.

Chronic suppurative lung infection has thus far been studied chiefly from a clinical and pathological point of view; however, this common, costly, and apparently communicable condition also presents public health aspects that point the way for planned prophylaxis. Chronic bronchopulmonary disease, formerly described as fibroid lung, chronic pneumonitis, or chronic pulmonary catarrh,[1] is the usual background of chronic bronchitis and chronic infectious asthma.[2] Frequently it is intimately associated with chronic upper respiratory infection.[1b] In most cases a mixed infection with common pyogenic bacteria, rather than a single organism, is the cause. This chest ailment usually takes an insidious course under the guise of repeated minor respiratory illnesses. More conspicuous events, especially bronchopneumonia, may mark the beginning or indicate an exacerbation; bronchiectasis and pulmonary emphysema are frequent complications.

Bronchiectasis is the second commonest lung disease.[1b] Community-wide chest x-ray surveys reveal approximately 70 cases of chronic nontuberculous lung infection for every 100 cases of active pulmonary tuberculosis.[3] Other studies suggest that approximately 70% of these nontuberculous cases are bronchiectasis.[1b] These estimates are minimal, since only cases of advanced disease with evident findings on routine roentgenograms were detected. A closer estimate of the incidence of bronchopulmonary disease is provided by data on chronic bronchitis, chronic sinusitis, and chronic asthma. The National Health Survey of 1935-1936 showed 1,700,000 persons to be affected by chronic bronchitis.[4] To these cases many of the 1,150,000 persons with chronic sinusitis can be added, since chronic bronchitis and sinusitis frequently complicate each other.[1b] Furthermore, most cases of chronic asthma, although still indexed among

From the Chest Clinic, Genesee Hospital.

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Some of the bibliographic references have been omitted from THE JOURNAL because of lack of space; however, they are included in the author's reprints.

Read before the Section on Preventive and Industrial Medicine and Public Health at the 101st Annual Session of the American Medical Association, Chicago, June 12, 1952.

the 3,500,000 victims of hay fever and asthma, represent the nonallergic infectious type of asthma rather than true allergy.[2] This survey would then indicate that in this country alone, at least 2 to 3 million persons suffer from chronic bronchopulmonary disease.

As mentioned before, the chronic stage of this ailment usually is preceded by repeated acute respiratory illnesses. The clinical experience that respiratory infection exhibits a particular tendency to recur in certain persons is supported by statistical observations.[5] Among 200 Rochester employees of various occupational groups, for example, approximately 90% of days lost by respiratory sickness during a five year period were concentrated in one-third of all investigated persons. More than other "minor respiratory infections," bronchitis manifests a repetitive and incipiently chronic character. Among these illnesses, bronchitis accounts for the longest average absenteeism in industry [6] and is responsible for the majority

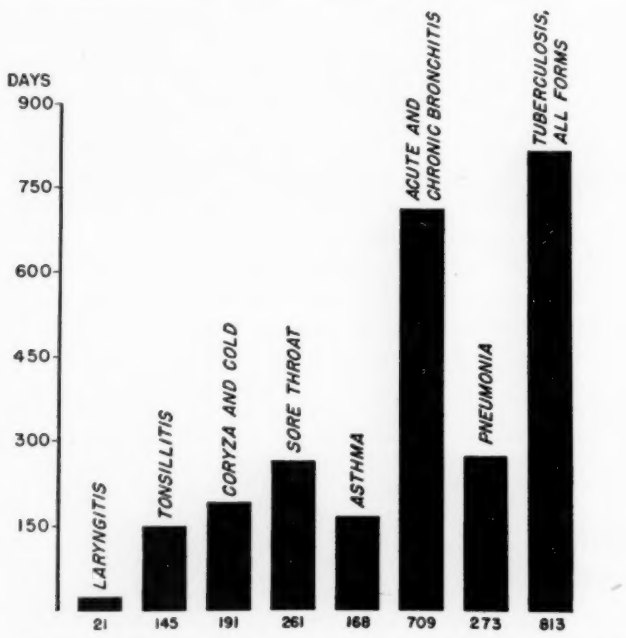

Fig. 1.—Annual days of disability because of respiratory illnesses per 1,000 population (Collins [7]).

of annual days of disability per 1,000 population (fig. 1).[7] Bronchopneumonia is a frequent complication of acute or chronic bronchitis, although it is often grouped statistically with acute pneumococcic pneumonia. Similarly, asthmatic bronchitis is grouped with asthma, although it should be considered a type of bronchitis. Thus acute and chronic bronchopulmonary disease is a major economic problem and rivals tuberculosis as a cause for lost manpower. In terms of production time lost, it exceeds the common cold in importance (fig. 1).

Respiratory infection of recurrent character oftenest becomes evident in childhood. Many sickly children do not outgrow their susceptibility to these sicknesses. Rather they remain at the same sick level, bearing the marks of chronic respiratory disease.[5a] This explains why bronchiectasis usually can be traced to childhood.[8] It is generally believed that children contract most of their respiratory ailments from extrafamilial sources, especially in school. They are said to have constitutionally low resistance to infection. Certainly the behavior of nontuberculous respiratory infections in a person may be influenced by his constitution, as it may be in tuberculosis. As far as treatment and prevention are concerned, however, common respiratory illnesses must be considered communicable like tuberculosis. Chronic bronchitis, asthmatic bronchitis, and sinusitis are persistent sources of pyogenic respiratory infections and therefore constitute important factors in the spread of such ailments. Observations on the familial character of chronic respiratory disease point toward intimate household contacts as the predominant cause.[9] Indeed, children susceptible to infection usually present this pattern before entering school and very often even in infancy. It is in early childhood rather than at school age that suppurative processes in the bronchopulmonary system pave the way for chronic bronchopulmonary disease by causing bronchial obstruction and atelectasis.[10] At present respiratory illnesses are considered by many to be a minor problem. Surely, thousands of children who a decade ago would have succumbed to pneumonia now survive and apparently are cured after a few days of antibiotic treatment; however, chronic disease often develops following inadequate treatment.[9d] Most persons with chronic pulmonary suppuration who would have died during an acute flare-up now recover under such therapy. On the other hand, these surviving patients with chronic cases now continue to spread the infection to younger members of their families.

Although over-all figures on mortality and duration of respiratory sickness may continue to decrease, recent surveys indicate an increase in the incidence of bronchopneumonia and other respiratory illnesses among children.[11] Current investigations among preschool and kindergarten children in Rochester, N. Y., show that some 30% in this age group still experience frequent and prolonged attacks of disabling sore throat, tonsillitis, otitis media, and bronchitis. These figures show no decrease from those obtained 10 years ago.[5a] Evidently antibiotics as presently used are not reducing the incidence of respiratory sickness; neither are they preventing recurrences; therefore they do not forestall the development of chronic disease. Thus respiratory infections still present major problems.

Although bronchopulmonary disease may have its onset in adults, especially following epidemic respiratory infections,[12] its prevention remains chiefly a pediatric problem. The need for adequate health supervision of sickly children with repeated respiratory sickness has been recognized for a long time.[13] Yet health programs still extend hardly beyond ruling out tuberculosis in these children and advising tonsillectomy, which usually does

1. (*a*) Leys, D.: Chronic Pulmonary Catarrh, London, H. K Lewis & Company, 1927. (*b*) Rubin, E. H.: Diseases of the Chest with Emphasis on X-Ray Diagnosis, Philadelphia, W. B. Saunders Company, 1947.

2*a*. Finke, W.: The Significance of Chronic Bronchitis in Infectious Bronchial Asthma, Ann. Allergy **5**: 364, 1947.

3. Reisner, D., and Rikli, A.: Community-Wide Chest X-Ray Survey: Diagnostic Clinic, Pub. Health Rep. **66**: 423, 1951.

5*a*. Downes, J.: Sickness as an Index of the Need for Health Supervision of the School Child, Am. J. Pub. Health **35**: 593, 1945.

7. Collins, S. D.; Phillips, F. R., and Oliver, D. S.: Specific Causes of Illness Found in Monthly Canvasses of Families: Sample of Eastern Health District of Baltimore, 1938-43, Pub. Health Rep. **65**: 1235, 1950.

8. Finke, W.: Prospects for Prevention of Chronic Bronchitis and Bronchiectasis: Rational Management of Bronchopulmonary Infections by Penicillin Aerosol Therapy, J. Pediat. **33**: 29, 1948.

not prevent recurrences of bronchitis and pneumonia.[14] Many children's beds in tuberculosis sanatoriums now are vacant, but there are few, if any, institutions for prolonged care of children even with established bronchiectasis. Medical care and research on prevention of serious and disabling childhood diseases, uncommon as they may be, are generously supported by public funds; however, prevention and planned treatment of nontuberculous respiratory infections that account for much suffering and prolonged disability are generally not considered to require public aid.

We now have therapeutic agents that, if wisely used, can eradicate most of these childhood respiratory illnesses. Present episodic treatment with antibiotics, however, often suppresses rather than eradicates respiratory infection, thus masking chronic disease. Therefore bronchopulmonary disease, even in its early stage, cannot be cured by temporary control of the underlying infection. As in tuberculosis or rheumatic fever, cure can be expected only from prolonged, planned therapy. Antibiotics are proving valuable in the prophylaxis of many conditions. Continuous treatment with penicillin has been established as an effective and safe method for preventing rheumatic fever recurrences.[15] The application of such management to the prophylaxis of respiratory infection still is a controversial issue. Some authors consider most of these illnesses of viral rather than bacterial origin and therefore hold antibiotics of little value.[16] This view seemingly is supported by the failure of mass prophylaxis by small daily amounts of penicillin administered orally to reduce the incidence of respiratory infections.[17] On the other hand, bacterial infection of primary or secondary character does play an important role in most respiratory illnesses, and supposed failures of antibiotics often are due to inadequate doses or other factors.[18] Continuous or intermittent antibiotic therapy is of unquestionable benefit to many patients with chronic bronchitis, chronic asthma, and bronchiectasis.[19] Observations on the reversibility of early bronchiectasis in intensively treated cases [18c] indicate that such therapy offers more than symptomatic improvement. Rehabilitation of patients and a decrease of the communicability of their infection are, from a public health point of view, important advantages to be gained by controlling chronic bronchopulmonary disease.

The rationale of utilizing modern therapeutic agents for the prevention rather than for treatment of a chronic condition initiated a long term study along this line six years ago.[20] More than 100 Rochester children have been submitted to a prophylactic regimen. All of these children, representing families of various economic situations, had a history of recurrent or persistent respiratory infection, and most of them showed significant clinical and roentgenographic findings. In 10%, early bronchiectasis could be proved. The usual types of treatment, including episodic antibiotic therapy, had failed to prevent subsequent relapses of bronchitis, pneumonia, or infectious asthma in these children. Therefore, it was attempted to reduce the number and duration of further respiratory episodes by more vigorous and continuous antibiotic therapy. Penicillin administered parenterally or orally or aerosol penicillin was used in all cases; at times newer antibiotics as well as sulfonamides also were administered. Details of this project surpass the scope of this paper; however, it should be mentioned that usually the above treatment resulted in striking and immediate improvement of the respiratory condition as well as the child's general health. Even more important, the natural course of a progressive disease was manifestly changed in many of these children. The beneficial effect of treatment was, of course, most prompt in less advanced cases without permanent pulmonary lesions. Recovery could, as a rule, be accomplished more easily in children of preschool age than in older ones.

The results of two controlled studies within this project, conducted over a 10 month period, demonstrate that continuous antibiotic therapy definitely reduced the amount of respiratory sickness in these children. The control group consisted of children with a clinical picture and an economic background comparable to the treated cases. These control patients, however, did not receive prolonged antibiotic therapy; instead they continued under conventional therapy such as symptomatic or allergic treatment or were submitted to tonsillectomy and adenoidectomy. Antibiotics, if given at all, were administered only during acute respiratory episodes. The number

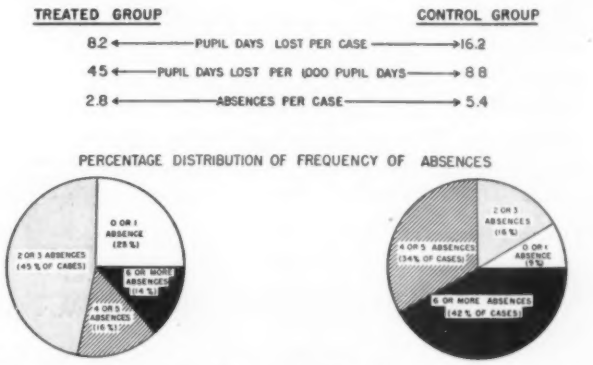

Fig. 2.—Lost school days and frequency of absences because of respiratory illnesses in 62 children with bronchopulmonary infection treated continuously with penicillin as compared with 54 controls (school year 1951-1952).

of disabling and nondisabling respiratory illnesses, excluding measles and pertussis, was 2.5 per child in 41 children of preschool age treated continuously with penicillin, compared with 4.3 in 35 controls. The number of days of respiratory illnesses was 9.3 days per child in the treated group as against 23.8 in the control group.

In a second study of older children the results of continuous antibiotic therapy with regard to disabling respiratory illnesses alone were analyzed. Figure 2 shows that the number of lost school days and of absences because of respiratory illnesses in the treated group was about half of that in the controls. The reported average

9d. Finke, W.: Childhood Pneumonia: A Common Cause of Bronchopulmonary Disease: Importance of Prophylaxis and Adequate Therapy, A. M. A. Am. J. Dis. Child. **83**: 755 (June) 1952.

11. (*a*) Linde, J. I.; Gelperin, A., and Granoff, M. A.: Causes of Absenteeism in New Haven Schools: Follow-up After 21 Years, Pub. Health Rep. **65**: 1737, 1950. (*b*) Kassowitz, K. E., and Muscato, G. H., Jr.: The Long Range Effect of Antibacterial Therapy on Pneumonia, Empyema, Bronchiectasis, and Pulmonary Abscess (An Analysis of Incidence and Mortality in 74,489 Admissions to a Children's Hospital in 20 Years), Dis. Chest **21**: 161, 1952.

12. Finke, W.: Prevention of Chronic Pulmonary Disease Following Epidemic Respiratory Infection, Am. Pract. **2**: 457, 1948.

13. Leys.[1a] Downes.[3a] Finke.[8]

18c. Finke, W.: Reversibility of Early Bronchiectasis: Its Implications for Therapy and Prevention, New York J. Med. **51**: 1163, 1951.

of absenteeism in school children due to respiratory illnesses approximates 25 days per 1,000 pupil days.[21] Thus the number of days lost in addition to this over-all average in the treated group was only one-third (20) of that in the control group (63). Only 30% of the 62 children continuously treated were absent from school more than three times, as against 76% of the controls. These significant results were obtained only by following an involved plan of treatment. Aerosol and parenteral therapy, when given over long periods, require the combined cooperation of children, parents, and physician; however, in this study health facilities in the community, as offered by school and visiting nurses, greatly reduced the time and expense entailed in treating the children. Moreover, penicillin administered orally could, for prophylactic treatment, replace to a large extent the more complicated methods, once the active infection had subsided.

It appears that with the cooperation of the private physician, preschool and school health programs could greatly contribute to the prevention of bronchopulmonary disease. An important step in this direction would be adequate therapy and prolonged follow-up of children with residual infection following pneumonia or similar illnesses. The prevention of these lung damaging episodes is the more rational approach. This could be accomplished best by conscientious observation of infants born into families in which chronic respiratory disease exists and by prompt elimination of significant respiratory infections.[9d] The familial aspects of bronchopulmonary disease should indeed guide preventive efforts. The discovery of chronic cases by the family physician or by routine chest roentgenograms can establish persistent sources of infection. Most of all, realization that even nontuberculous respiratory ailments constitute a health hazard to the family could help reduce these illnesses in childhood. Daily experience shows that chronic respiratory infections strike most severely needy families living under crowded housing conditions. Therefore, public aid, where necessary, should be available to facilitate clinical and institutional care. As in other preventive programs that promise cure or rehabilitation, the financial burden to the community would be but a fraction of future economic loss.

SUMMARY

Bronchopulmonary disease presents certain public health aspects because it is a common, communicable, and preventable condition. Since it often leads to serious complications, such as bronchiectasis, and accounts for enormous economic losses, it should be an important object of preventive medicine.

A dynamic, prophylactic approach should utilize present knowledge that the disease most frequently originates from inconspicuous respiratory ailments during childhood. Rational and prolonged use of antibacterial agents in the treatment of these potentially chronic ailments is likely to prevent the development of permanent disease.

The familial character and the significance of socioeconomic factors in bronchopulmonary disease demand the inclusion of this condition in preventive health programs, especially among children.

333 Park Ave. (7).

CHANGING INDICATIONS FOR THERAPEUTIC ABORTION

TWENTY YEARS' EXPERIENCE AT LOS ANGELES COUNTY HOSPITAL

Keith P. Russell, M.D., Los Angeles

The interruption of pregnancy for therapeutic reasons before the period of viability presents problems with varied social, moral, religious, and economic ramifications as well as the basic medical considerations. Until as recently as the past decade, therapeutic abortion was a relatively common procedure, well accepted by the majority of physicians as properly indicated for the preservation of the mother's life or immediate health in certain complicated pregnancies. All modern textbooks discuss the procedure, listing indications and incidences and describing methods of producing abortion. Emphasis is commonly placed, and properly so, on the concept that abortion is induced not to destroy the fetus but to conserve the mother.

During the past 10 years, however, there has been a growing appreciation of the fact that many indications for therapeutic abortion are no longer tenable in the light of continuing advances in medical and surgical knowledge. This realization has stimulated many institutions and organizations to study this procedure carefully and to reevaluate their methods of managing the associated problems.[1] The large decrease in the general maternal mortality rate to less than 1 per 1,000 live births has made it apparent that many of the complications formerly considered inimical to the mother's life can now be satisfactorily treated and the mother successfully carried through pregnancy. Unfortunately, however, not all complications fall in this category. Cases still occasionally arise in which the mother's life or immediate health must be weighed against the continuation of her pregnancy. It would appear that one of the best methods for evaluating current practices in this regard would be the study of statistics from various large institutions. This thought has motivated many recent publications of this type. It was my feeling that a review of the past 20 years' experience at the Los Angeles County Hospital would be of benefit in emphasizing the changing indications for this obstetrical procedure and of value from a comparative standpoint to other institutions confronted with these problems.

From the Department of Obstetrics and Gynecology, University of Southern California School of Medicine.

Read before the Section on Obstetrics and Gynecology at the 101st Annual Session of the American Medical Association, Chicago, June 12, 1952.

1. (*a*) Russell, K. P.: Therapeutic Abortion in a General Hospital, Am. J. Obst. & Gynec. **62**: 434 (Aug.) 1951. (*b*) Russell, K. P.: Therapeutic Abortions in California in 1950, West. J. Surg. **60**: 497 (Oct.) 1952.

MATERIAL

This report consists of a statistical study of therapeutic abortions performed at the Los Angeles County Hospital during the 20 year period 1931 to 1950, inclusive. It should be noted that this hospital is largely a charity institution and that all patients in this study are indigent. No private patients are included. The hospital is a general one in all respects, so that other specialties are closely integrated with the obstetrical service, and all pregnancies complicated by pathological conditions are studied in the allied departments. Patients considered possible candidates for termination of pregnancy are presented to the obstetrical staff, with recommendations of the consultants who examined them. The decision as to termination or continuation of the pregnancy then is made by the majority of the staff, subject to the final approval of the senior attending obstetrician in charge of the particular service.

During the period of this study, 305 therapeutic abortions are listed as having been performed in this institution; however, 10 of these instances cannot be classified strictly as therapeutic abortions, since they

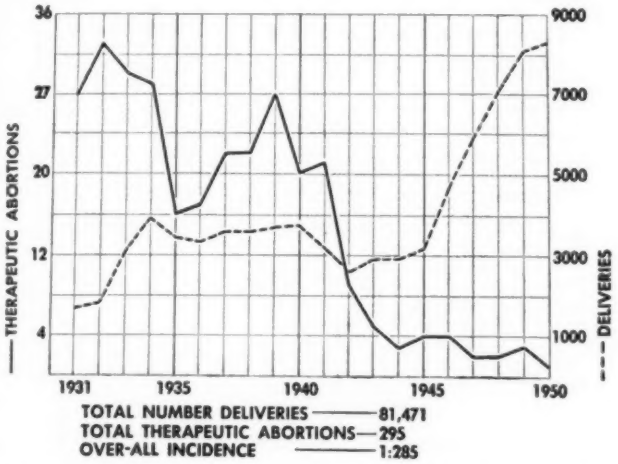

Fig. 1.—Incidence of therapeutic abortion at Los Angeles County Hospital, 1931 to 1950.

were found to have been performed later than the 28th gestational week. These are not, therefore, included in the statistics, leaving a total of 295 cases as the basis of the report.

Twenty-five of the 295 patients were under 20 years of age, 149 were between 20 and 29, 112 were between 30 and 39, and 9 were 40 or over; the youngest patient was 15, and the oldest was 44. Fifty-five patients were primigravida, 66 were nullipara, and 229 were primipara or multipara; the highest parity in the group was 15.

From 1931 through 1950 there were 81,471 deliveries in the hospital. This gives an over-all incidence of one therapeutic abortion per 285 deliveries. The true picture of the changing incidence as well as the present use of this procedure in the hospital is more properly indicated by a study of the yearly figures, as shown in figure 1. Since current trends toward conservatism are evolving gradually it is also of value to note the changing incidence over five year periods (fig. 2). For comparative purposes the incidence at this institution is shown with the incidence reported in other institutions for somewhat similar periods (table 1).

INDICATIONS

Although there was a great variety of individual conditions recorded as indicating the therapeutic termination of pregnancy, the majority of cases fell in three major classifications (table 2). Thus, 174 terminations (about 60%) were performed for pulmonary tuberculosis, 34

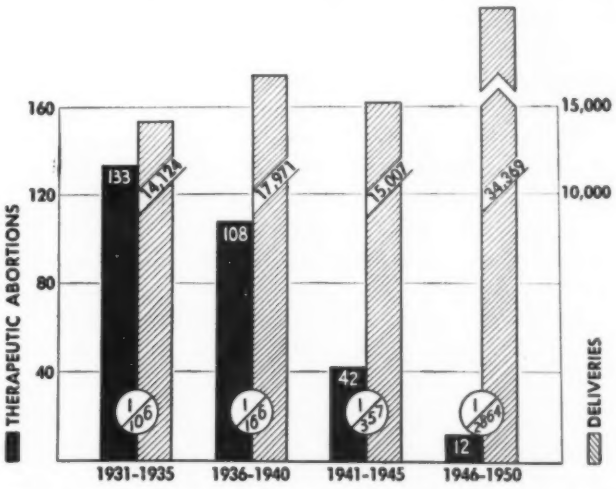

Fig. 2.—Incidence of therapeutic abortion at Los Angeles County Hospital for five year periods from 1931 to 1950.

(11.5%) for maternal heart disease, and 37 (12.5%) for renal and hypertensive disease accounting for over 80% of all the abortions done; 14 (4.5%) were done for mental and nervous disease and 36 for miscellaneous individual indications.

Pulmonary Tuberculosis (Fig. 3).—In the early years of the study pulmonary tuberculosis accounted for over 60% of the abortions performed in this institution. This was in accord with current concepts at that time; it was felt that pregnancy exerted a deleterious effect on the

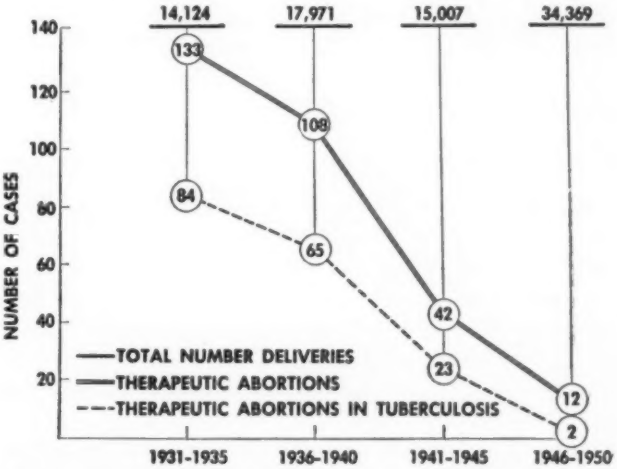

Fig. 3.—Comparison between total number of therapeutic abortions and number done for tuberculosis at Los Angeles County Hospital for five year periods from 1931 to 1950.

course of tuberculosis, and therapeutic abortion was invoked to prevent progression of the disease. As is now well documented,[2] this concept is no longer applicable

2. Schaefer, G.: Pregnancy and Tuberculosis: A Review of the Literature, Obst. & Gynec. Surv. **6**: 767 (Dec.) 1951. Schaefer, G., and Epstein, H. H.: Results Following Therapeutic Abortion in Pulmonary Tuberculosis, Am. J. Obst. & Gynec. **63**: 129 (Jan.) 1952.

in the average case, and there has been a marked decline in the use of this procedure in recent years. Only two patients have been aborted for this indication in the past five years (fig. 3). This does not represent a considerable decline in the incidence of tuberculosis in pregnant patients in this community or any change in administrative procedure in the disposition of these cases. Primarily, it is a reflection of changing medical concepts in the management of pregnancy complicated by tuberculosis. It is now generally accepted by our staff that therapeutic abortion per se does not stop the progression of pulmonary tuberculosis, that, in fact, the institution of proper therapy for the infection may be delayed by the procedure, and, finally, that almost all medical and surgical procedures now utilized in the treatment of tuberculosis may be successfully carried out during pregnancy without harm to the latter.

Cardiac Disease.—Heart disease in the mother resulted in 34 abortions. Thirty-two of the cases were rheumatic in nature. As a cause of death, maternal cardiac disease is still important. In some clinics it is now the leading cause of maternal death and in others is exceeded only by hemorrhage as the leading cause. It is of interest to note that 6 of the total of 12 abortions performed during the past five years in this hospital have been on the indication of cardiac disease. Advances in surgical correction of certain heart lesions existing in women of childbearing age by such measures as valvulotomy, commissurotomy, and the Blalock operation and related procedures may further reduce the incidence of therapeutic abortion, as indicated by reports of patients being successfully carried through pregnancy subsequent to this type of surgery. We have recently reported one such satisfactorily managed case following a Blalock operation for the tetralogy of Fallot.[3]

Renal and Hypertensive Disease.—This classification accounted for 37 cases, or about one-eighth of the total. The majority of these were of a hypertensive nature and included cases that in other reports are classified as toxemias. Less common indications included diseased remaining kidneys in nephrectomized patients and renal tuberculosis. Prior to 1940, pyelitis was commonly listed as indicating termination.

Mental and Nervous Disease.—Although there are 14 patients listed in this classification, it is important to note that no patient has been aborted on this indication since 1942. Prior to this time, the majority of abortions in this group were performed for major psychoses (4 cases) and epilepsy (4 cases).

Miscellaneous Indications.—There were 36 patients in this category. Almost all indications were isolated and individual, with the exception of two major subgroups: hyperemesis gravidarum (9 cases) and uterine fibromyomas (8 cases). The latter can hardly be considered a valid indication according to present concepts. No abortion has been performed for hyperemesis since 1937, all 9 patients being aborted in the early part of the survey. No patient has been aborted on a miscellaneous indication since 1943. The indications for abortion in the other 19 cases were as follows:

Carcinoma of breast (1931, 1935, 1937)	3
Toxic hepatitis (1939, 1943)	2
Carcinoma of cervix (1940)	1
Central nervous system syphilis (1933)	1
Fibrosarcoma of uterus (1933)	1
Asthma (1936)	1
Arthritis (1931)	1
Porphyrinuria (1932)	1
Chronic bronchiectasis (1941)	1
Bronchopleural fistula (1940)	1
Miliary mycotic infection (1937)	1
Rape (1936)	1
Court order (1940)	1
Delayed union, femoral fracture (1933)	1
Ankylosis of hips (1934)	1
Multiple injuries, auto accident (1935)	1

TABLE 1.—*Comparison of Incidence of Therapeutic Abortion in Various Institutions*

Source	Institution	Period	Therapeutic Abortions	Ratio of Therapeutic Abortions to Deliveries
Perlmutter, I. K.: Am. J. Obst. & Gynec. **53**: 1008, 1947	University Hospital, New York	1935-1945	199	1:76
Kuder, K., and Finn, W. F.: Am. J. Obst. & Gynec. **49**: 762, 1945	Lying-In Hospital, New York	1939-1943	280	1:167
Hesseltine, H. C.; Adair, F. L., and Boynton, M. W.: Am. J. Obst. & Gynec. **39**: 549, 1940	Lying-In Hospital, Chicago	1931-1939	134	1:195
Moore and Randall [4]	Iowa University Hospital	1926-1950	137	1:176
	Los Angeles County Hospital	1931-1950	295	1:285

TABLE 2.—*Indications for Therapeutic Abortion at Los Angeles County Hospital, 1931-1950*

	Patients	
	No.	%
Pulmonary tuberculosis	174	59.5
Cardiac disease	34	11.5
Renal and hypertensive disease	37	12.5
Mental and nervous disease	14	4.5
Miscellaneous	36	12.0
	295	100

METHODS OF TERMINATION

The various methods utilized in terminating pregnancy in this series were as follows:

Dilatation and curettage	59
Dilatation and curettage plus tubal sterilization	2
Hysterotomy	13
Hysterotomy plus tubal sterilization	123
Fundectomy	32
Hysterectomy	66
	295
Sterilization incidence	75.6%

3. Russell, K. P.; Dalike, W. E., and Buell, J. I.: Pregnancy Following Blalock Operation for Tetralogy of Fallot, J. A. M. A. **149**: 266 (May 17) 1952.

The sterilization incidence was exceptionally high because it was felt that most of these patients had complications of such severity as to be for the most part irreversible. This, of course, should be true in most cases of therapeutic abortion. If the disease is severe enough to warrant abortion, usually sterilization is also indicated. In the first decade of the study, hysterotomy with tubal sterilization and fundectomy were the procedures of choice, accounting for over 65% of 230 interruptions. During the past 10 years, however, there has been a growing use of hysterectomy in cases in which sterilization is also desired. Thus, of the 65 abortions performed in the second decade of the study, 34 were done by hysterectomy and only 12 by hysterotomy and fundectomy. The use of hysterectomy in such cases was discussed in a previous communication,[1a] in which it was pointed out that achievement of sterilization was more certain by this method than by tubal methods and that the subsequent development of benign and malignant uterine tumors and related menstrual disorders was obviated by this procedure. This is a much higher rate for the use of hysterectomy for sterilization than is the case in most other reported series; the most recent study, that of Moore and Randall,[4] shows only 14 sterilizations by hysterectomy among 95 cases. In a previous report from a private hospital in this area, however, I found that hysterectomy was the method used for purposes of sterilization in 26 (60%) of 43 cases.[1a]

MORTALITY

The relation of therapeutic abortion to maternal mortality is difficult to evaluate. The generally decreasing maternal mortality rate in this country may constitute an argument against any role for therapeutic abortion. Yet, two of the four major causes of maternal death, toxemias and cardiac disease, still appear to offer a limited place for this procedure. The patient's subsequent life history does not always give a true answer to the question of whether abortion should have been performed. In this particular series, 21 patients subsequently died in this hospital. Four died during the same admission in which the therapeutic abortion was done, within 1 to 14 days, giving a mortality rate for this procedure of 1.3%. The other 17 deaths occurred from 3 months to 19 years after the abortion was performed, and in each instance death was due to the condition for which the pregnancy had been terminated. The average survival time for those 17 patients was 6.8 years.

A brief summary of the four cases in which the patient died immediately follows: 1. In 1932, a woman, aged 33, gravida 3 para 1, was aborted on Feb. 4 at three months of pregnancy for pulmonary tuberculosis. Hysterotomy and sterilization were done. She died Feb. 10 of pulmonary embolism. 2. In 1934, a 17-year-old woman, gravida 1, was aborted on Aug. 28 at 3½ months of pregnancy for hyperemesis gravidarum. Dilatation and curettage were done. She died Sept. 10 of hyperemesis. 3. In 1940, a woman, aged 35, gravida 4, para 3, was aborted on Jan. 7 at 3½ months of pregnancy for essential hypertension with retinal hemorrhages. Vaginal hysterotomy was done. She died Jan. 20 of ruptured aneurysm due to hypertension. 4. In 1941, a woman, aged 18, gravida 1, was aborted Feb. 1 at 13 weeks of pregnancy because of chronic bronchiectasis. Dilatation and curettage were performed. The patient died on the same day of chronic bronchiectasis.

COMMENT

Assessment of what constitutes a threat to the life of the mother during pregnancy is subject to broad interpretation; this has led to confusion and uncertainty in evaluation of the many controversial aspects of therapeutic abortion. In the past there has been all too frequently an assumption, in the absence of specific knowledge and experience, that pregnancy may be a harmful process in the presence of certain complications. Such a concept has led to many therapeutic interruptions of pregnancy for indications that, in the light of advances in medical and surgical treatment, are no longer valid. It is admittedly difficult to evaluate a given case from a study of the chart alone, and it is only by documentation of current practice that the changing indications for therapeutic abortion can be evaluated properly. With this in mind, it appears pertinent to emphasize certain observations brought out by this study: 1. Whereas the average incidence of therapeutic abortion in the Los Angeles County Hospital 20 years ago was 1 in every 106 deliveries, during the past five years it has been 1 in 2,864 deliveries and in the past year, 1 in 8,383 deliveries. 2. Only 12 abortions have been performed during the past five years. These were for three indications: maternal cardiac disease, 6 patients; renal and hypertensive disease, 4 patients; pulmonary tuberculosis, 2 patients. 3. No abortions have been performed for hyperemesis gravidarum since 1937. None has been performed for pyelitis since 1939. 4. No abortions have been performed for fetal indications in the past 20 years. 5. No abortions have been performed for mental or nervous system diseases since 1942. 6. Of the patients aborted, 75.6% were also sterilized. 7. Hysterectomy was the procedure most commonly utilized during the past 10 years when sterilization with abortion was desired, accounting for over 70% of the sterilizations performed. 8. Despite a greatly lowered incidence of therapeutic abortion, the maternal mortality rate in the hospital has not risen; rather, it has shown a progressive decline.[5]

SUMMARY

A report of therapeutic abortions performed at the Los Angeles County Hospital during the past 20 years is presented. Emphasis is placed on the decreasing incidence of indications for this procedure that are considered acceptable at this institution.

511 S. Bonnie Brae St. (5).

4. Moore, J. G., and Randall, J. H.: Trends in Therapeutic Abortion: A Review of 137 Cases, Am. J. Obst. & Gynec. 63: 28 (Jan.) 1952.

5. Annual Reports of the Los Angeles County Hospital, Department of Charities, County of Los Angeles, Calif.

MASS SCREENING TECHNIQUES FOR CHEST DISEASES

INDUSTRIAL MEDICAL ASPECTS

O. Merton Derryberry, M.D., Chattanooga, Tenn.

In the past decade, millions of Americans have attended mobile and permanent screening clinics for x-ray examination of the chest.[1] A strong impetus to widespread public understanding and acceptance of this new case-finding tool was its early use in the armed services and in industry. The results have been widely reported.[2] The relatively large military and industrial groupings provided an ideal situation for working out answers to some of the earlier problems in the organization and execution of mass x-ray screening. The key importance of these groups to the national welfare made it worth a special effort to find and study potential foci of spread of tuberculosis in order that early preventive action would conserve essential manpower in critical times.[2a]

This presentation of some of the industrial medical aspects of mass x-ray screening of the chest purposely does not deal with the variability inherent in different radiological techniques. The judgment of those experienced in the field is accepted, namely, that the errors in any method of chest x-ray examination and variations in interpretation of the roentgenograms by different observers and in the original and repeat readings of the same observer indicate that no one size of film is superior to any other in case finding effectiveness in mass surveys.[3] If this premise is accepted, the impact of mass surveys on industrial medicine is determined by applicability of the method to the industrial situation and evaluation of results.

VALUE OF MASS SCREENING

It is now generally agreed that mass surveys of the chest are not intended to establish a final diagnosis but to focus attention on persons who show abnormal conditions in order that further study can reveal what the abnormality is and what should be done about it.[4] The potential usefulness of the chest survey film for the discovery of abnormalities other than tuberculosis has become increasingly recognized,[5] and the health education value of mass screening of the chest has received extensive comment.[6] The support of management and employees alike in mass x-ray surveys is also well documented.[7] This support has been personally noted by the writer on many occasions since the early beginnings of mass x-ray screening among industrial workers.

The host-parasite relationship in tuberculosis has been referred to as a "continuum"[8] that should be periodically observed over a long period if it is to be known promptly and with reasonable accuracy when application of particular preventive or therapeutic measures is necessary for the protection of the public and the patient. An effective industrial medical service is in a key position to employ mass screening to help make these observations. It is clear that mass screening for chest disease has been an effective tool of preventive medicine as used in the industrial situation. It has resulted in detection of many cases of communicable and noncommunicable disease among workers, with the result that those patients have been placed under early observation or treatment, with benefit to the employee, his associates, and the employer. It has been a well-received basis on which both categorical and general health education programs have been developed [9]; it has emphasized the importance of cooperation between industrial management, the official health agency, and the practicing physician.[10]

REQUISITES FOR SUCCESSFUL SCREENING

The potential benefits from mass screening of the chest appear to vary depending on whether there exists in the industrial organization a full-time health service directed by an adequately trained physician.[4a] Without such a service, follow-up, the real payoff, must be largely a matter of individual initiative after positive or suspicious results have been reported. Where an organized industrial health service exists, the survey results can become a part of the employee's medical record and, along with the results of his preplacement medical examination and any necessary supplemental tests, provide a basis for a more refined judgment of the need for referral. This type of follow-up is a well-established function of employee health service and is regularly carried on with respect to many conditions potentially disabling to the worker or communicable to his fellow workers. The long term relationships between the employee and his plant health service provide an excellent setting in which to influence some of the variables that help determine the ultimate value of screening: a high percentage of employee participation can be obtained; suspicious, positive, or indeterminate findings can be followed conveniently, effectively, and economically for both employee and employer; there is greater assurance that treatment will be received, since both medical guidance and the assistance of employee welfare associations are available; and

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Director of Health, Division of Health and Safety, Tennessee Valley Authority.

Because of space limitations, some of the bibliographic references have been omitted from THE JOURNAL and will appear in the author's reprints.

Read before the Joint Meeting of the Section on Military Medicine, the Section on Preventive and Industrial Medicine and Public Health, and the Section on Radiology at the 101st Annual Session of the American Medical Association, June 10, 1952.

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3*b*. Weber, F. J.: Evaluating Roentgenographic Techniques, Pub. Health Rep. **62**: 1431 (Oct. 3) 1947.

3*c*. Reliability of Interpretation of Chest X-Ray Films, editorial, J. A. M. A. **147**: 1765 (Dec. 29) 1951.

4*a*. Edwards, H. R.: Mass Case Finding Surveys in Industry, Role of the Plant Physician, Tuberculosis in Industry, Indust. Hyg. Bull. no. 9, 1949.

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better opportunities for rehabilitation can be worked out, including appropriate job placement on return to duty or disability retirement if the latter is indicated.

TVA SURVEYS

The potential benefits of mass screening prompted the Tennessee Valley Authority to purchase a cab-over-engine type of truck in 1942 and convert it into a mobile x-ray laboratory. TVA was one of the early users of this type of unit. For the first five years of operation the laboratory was equipped to make 35 mm. stereoscopic photofluorograms. In 1948, the unit was converted to produce stereoscopic 70 mm. size films. From 1943 through 1950, six chest screening surveys were made of TVA employees at widely scattered locations in an area of over 80,000 square miles. Large groups of employees, numbering in the thousands, were located at major construction projects, while smaller groups of a few to a few hundred were at operating centers, substations, and other office or work locations. The complexity of the screening job was heightened by high employee turnover, which, in some instances, made follow-up difficult or impossible and, therefore, created large gaps in the survey data. High employee turnover was felt to be characteristic of the disturbed war years and, in general, is more prevalent among construction crafts than among workers in manufacturing and many other industries.

Results of the surveys of TVA employees are shown in table 1. A total of 76,358 films were made in mass chest surveys by TVA from 1944 through 1949. Employee participation ranged from 71 to 90%. The percentage of survey films read as abnormal ranged from 1.3 to 6.2. The lower readings occurred after the 35 mm. photofluorographic unit had been replaced with the 70 mm. size. The percentage of films read as showing reinfection tuberculosis ranged from 0.6 to 3.5, and the percentage read as showing other chest abnormalities was in about the same range. One interesting development in connection with survey follow-up activities was that stereoscopic 70 mm. film often provided a satisfactory x-ray judgment of the status of the tuberculous infection. The role of this film in long-term studies of the tuberculosis "continuum" referred to is yet to be firmly established, but the limited experience of our observer suggests that it may be highly effective. Complete data cannot be reported owing to the fact that many abnormal cases could not be followed because of termination of employment. In these cases, notification of findings sent by letter to the last known address had to suffice.

A unique feature of mass x-ray screening in TVA has been the fact that, until 1950, surveys were organized and conducted and follow-up was initiated by personnel of the TVA Employee Health Service, using TVA's own survey unit. Referrals were made only after recheck examination in a TVA health office indicated there was in fact an adequate basis for referral. As long as the person remained in employment, doubtful cases were easily followed.

SURVEYS OF TVA EMPLOYEES BY OFFICIAL HEALTH AGENCIES

By 1950, mass chest screening programs had been extensively developed by official health agencies in the Southeast, and arrangements were made for mobile units of the agencies to visit several TVA projects for screening surveys. Operation of the TVA mobile unit was discontinued. Presurvey and follow-up activities remained unchanged and did not differ substantially in effectiveness, nor was there significant change in employee participation under the new arrangement. A total of 9,677 films were made in mass chest surveys of TVA employees performed by official health agencies of Tennessee, Kentucky, and Alabama from 1950 through 1952 (table 2). Both 70 mm. and 4 in. by 5 in. single films were used. The percentage of employees on construction projects who participated approximated closely the experience when TVA equipment was used. Insofar as complete data are available, the percentages of films read as abnormal are also roughly within the same range.

From the administrative and functional points of view, the use of chest x-ray screening services of the official health agency has been comparable in effectiveness to operation of our own unit in areas of employee concentration. There is no doubt, however, that lessons learned from development and execution of a complete and self-contained TVA chest screening service over a period of several years facilitated TVA's effective use of the results of mass screening provided by the official health agency.

POTENTIALITIES OF MULTIPLE SCREENING

The effective application of mass x-ray screening of the chest in TVA's employee health service led us to consideration of multiple screening as a tool of preventive medicine. If this relatively new technique is ultimately established as an effective and economical means of reducing the morbid effects of major chronic diseases, it may be even more adaptable than categorical screening to health programs in industry. The same advantages

TABLE 1.—*Results of TVA Mass Chest Surveys, 1944-1949*

	Fiscal Year				Fiscal Year	
	1944	1945	1946	1947	1948	1949
	35 Mm.				70 Mm.	
Average no. of TVA employees	24,354	16,011	11,917	12,950	14,507	14,030
Total no. of films taken in TVA survey	20,291	13,057	10,192	15,172	11,975	5,681
Range in no. of films taken at single location	14 to 5,362	36 to 2,492	64 to 2,842	9 to 2,938	41 to 3,457	33 to 3,003
Employee participation, %	77	71	76	79	86	90
Films read as abnormal, %	4	6.2	5.6	5.9	3	1.3
Films read as reinfection tuberculosis, %	1.7	3.5	3	Data not available	1.2	0.6
Films read as nontuberculous chest conditions, %	0.6	1.6	3.4	Data not available	Data not available	0.7

TABLE 2.—*Mass Chest Surveys of TVA Employees Made by Official Health Agencies, 1950-1952*

	Fiscal Year		
	1950	1951	1952
Total films taken	3,690	4,950	1,037
Wilson Dam area			
Films taken	2,940	.....	.....
Employee participation, %	81	.....	.....
Films read as abnormal, %	4.4	.....	.....
Johnsonville project			
Films taken	750	754	.....
Employee participation, %	83	82	.....
Films read as abnormal, %	Data not available	4.2	.....
Knoxville area			
Films taken	.....	1,050	.....
Employee participation, %	.....	50	.....
Films read as abnormal, %	.....	Data not available	.....
Boone project			
Films taken	.....	767	.....
Employee participation, %	.....	73	.....
Films read as abnormal, %	.....	1.2	.....
Chattanooga area			
Films taken	.....	1,123	.....
Employee participation, %	.....	57	.....
Films read as abnormal, %	.....	Data not available	.....
Shawnee project			
Films taken	.....	1,256	.....
Employee participation, %	.....	81	.....
Films read as abnormal, %	.....	3.3	.....
Kingston project			
Films taken	.....	.....	1,037
Employee participation, %	.....	.....	84
Films read as abnormal, %	.....	.....	Data not available

exist in industry for the presurvey and follow-up activities of multiple screening as is the case with the more limited approach, and the values of the multiple approach are similar to those of the limited. Experimentation with this promising new tool is in progress.[11] Both proponents and opponents have already made themselves known.[12] Some apparently are ready to condemn it, while others favor a period of observation and experiment.[13]

During the past year, in a pilot study at a TVA project, 320 (49%) of 651 employees screened had abnormal health conditions of varying degrees for which corrective action was advised (constituting 91% of all abnormal findings) after follow-up studies were completed. Plans are now under way to adopt the technique for use in a mobile unit that will visit some 60 scattered locations at which a total of about 5,000 employees work and to organize similar services at one or more permanent locations where 1,500 or more employees work. The total results produced by this approach can be evaluated along with those produced by the "periodic health examination." Industrial medical services are strategically placed in the relationship between employee and the practicing physician and can play a leading role in the progression from case finding, through diagnosis, follow-up, and treatment, to rehabilitation. For this reason, the industrial situation appears to offer an excellent testing ground for multiple screening.

11 E. 11th St.

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MASS SCREENING TECHNIQUES FOR CHEST DISEASES

Arthur C. Christie, M.D., Washington, D. C.

The term "mass screening" signifies the roentgen examination of large segments of the population for the discovery of persons having pulmonary tuberculosis. It was advocated as early as 1917 by Lewis Gregory Cole and Leon T. LeWald [1] and others for use by the military services in World War I, but practical considerations prevented its adoption at that time. Until the late 1930's, the use of the roentgen method was greatly restricted by its cost. Even before that time, however, many relatively small surveys had been made, chiefly of school children and employees in industry, by means of conventional films or photographic roll paper. It was the development of the photofluorographic method that made roentgen examination of the chest practical as a screening process for examination of large segments of the population.

The use of photofluorography for chest examinations was first really inspired in the United States by the work of de Abreu [2] in Brazil. In 1936, he used the 35 mm. film for photofluorography on a large scale. During 1937 and 1938, the method was widely used in Denmark by Johannes Holm,[3] who visited the United States about that time and created much enthusiasm for the photofluorographic method for mass screening. In 1939 and 1940, a photofluorographic apparatus using a large lens and producing a 4 by 5 in. (10.2 by 12.7 cm.) picture was developed by the General Electric Company. This was brought to the attention of the medical profession, and confidence in its value was established by publications of Hollis E. Potter,[4] in 1940. At about the same time, Behrens [5] developed a 35 mm. apparatus at the Naval Medical School in Washington, D. C. At the beginning of World War II, the U. S. Army adopted the 4 by 5 in. photofluorographic unit, and the U. S. Navy adopted the 35 mm. apparatus of Behrens. This resulted in examination of about 18 million men during the war. This was the real beginning in the United States of mass surveys for discovery of pulmonary tuberculosis. Since then, apparatus has been improved, with improved screens and lenses, the introduction of the Morgan phototimer, and the development of the 70 mm. film apparatus.

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At the close of World War II, it was apparent to leaders in antituberculosis work in the United States that the method of mass screening used so extensively in the military services was applicable to the civilian population. The Tuberculosis Control Division of the United States Public Health Service had been established in 1944. Through its initiative and guidance, the photofluorographic method with the 70 mm. film was perfected and popularized. The Tuberculosis Control Division rapidly developed an organization for cooperation with municipal, county, and state health departments on the one hand and with the National Tuberculosis Association and its local units on the other. Through its leadership, mass surveys in many localities throughout the nation have followed each other as rapidly as available apparatus and trained personnel would permit. Every survey is carried out under the authority and supervision of the official health department of the community in which it is held. The duty of the United States Public Health Service is to furnish or augment the photofluorographic apparatus, supply personnel for its operation, recommend trained professional personnel for reading the survey films, help establish and maintain record systems to assure patient follow-up and statistical summation, and assist by advice and counsel in the general and detailed work of the survey. One of the most admirable results of mass surveys as they have developed throughout the nation has been the demonstration in city after city and in state after state of the possibility of complete cooperation among federal and state health agencies, local health departments, in which resides most, if not all, official authority for regulation of disease control, the local medical profession and its medical society, local tuberculosis associations, and the general public, whose approval and moral and financial support are essential for the success of any movement for control of tuberculosis. It is only where such good over-all relations are established that a mass survey can be organized and carried to a successful conclusion.

EXTENT OF PROGRAM

Understanding of the present status of the tuberculosis control program in the United States is possible only if the relationship of official to nonofficial agencies is recognized. The establishment of the Tuberculosis Control Division of the United States Public Health Service came after many years of uncertainty and debate as to the relative place of private and official agencies in tuberculosis control. It is only recently that prevention and treatment of tuberculosis have become recognized widely as a single problem. Anderson and Blomquist[6] have emphasized the growing necessity for a program of tuberculosis control that will include every phase of the problem. There is now a general, if somewhat tacit, recognition of the respective roles of public and private agencies in the total antituberculosis program. The official agencies are the state health departments and their county and municipal subdivisions and the Tuberculosis Control Division of the United States Public Health Service. The most important of the nonofficial organizations is the National Tuberculosis Association, which has units scattered throughout the nation. It was only gradually recognized that certain parts of the tuberculosis program must be administered and controlled by official agencies. It is now generally accepted that responsibility for sanatoriums, tuberculosis clinics, and nursing and social service care as well as registration of the tuberculous patients must rest in the state. The tuberculosis associations, coordinated and unified in the National Tuberculosis Association, must be responsible for a continuous educational program that informs the public and defines the problem in all of its changing aspects in each community; they are concerned also with research, legislation, and the provision of necessary facilities for care of patients and management of the disease. Viewed in this light, it is apparent that "mass screening" is only a small segment of a total program but nevertheless a segment on which the success of the total program depends.

The mass screening process was extended to the civilian population on a large scale in 1946. At that time it was the stated objective to secure photofluorographic films of the entire population over 15 years of age in a period of five years. This objective was not reached, but, nevertheless, about 50 million such examinations were made from 1946 to 1950, inclusive. The surveys covered the United States from coast to coast and included all types of communities, municipal, suburban, and rural. The main purpose of this paper is to discuss summarily some of the important knowledge that has emerged from this vast experience.

FOLLOW-UP PROBLEMS

It is obvious that case finding by mass screening or any other method is of little value unless there is careful follow-up of the cases disclosed. It is necessary both for the treatment of the individual patient and for protection of the community. It has not been so obvious, however, that follow-up studies of the data available from a survey can have far-reaching statistical value that may be of great importance in the total problem of tuberculosis control. Plans were made in most of the large surveys for a period of follow-up study of the cases disclosed by the survey, but usually these plans were not made with sufficient care or in sufficient detail to insure maximum benefit from follow-up studies. It is apparent now that codes and tabulations must be carefully prepared beforehand and placed in the hands of clinics, physicians, nurses, social workers, and all who are concerned with keeping the records so that all may understand clearly what data are required. It is necessary also that terminology in use by physicians be uniform. The use of such terms as "negative TBC, follow" and "positive pathology" renders such cases useless for statistical tabulation. It should also be noted that patients who have been given such an indefinite diagnosis or who have been listed as having "suspected" tuberculosis have been found to be much more difficult to follow

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2. de Abreu, M.: Process and Apparatus for Roentgen Photography, Am. J. Roentgenol. **41**: 662-666 (April) 1939; Collective Fluorography, Radiology **33**: 363-371 (Sept.) 1939.

3. Holm, J., cited in Hilleboe, H. E., and Morgan, R. H.: Mass Radiography of the Chest, Chicago, The Year Book Publishers, Inc., 1945, p. 15.

4. Potter, H. E.: Miniature Films in Chest Surveys, Radiology **34**: 62-65 (Jan.) 1940. Potter, H. E.; Douglas, B. H., and Birkelo, C. C.: Miniature X-Ray Chest Film, ibid. **34**: 283-291 (March) 1940.

5. Chambers, W., and Behrens, C. F.: Roentgen Photography: Economical Method for Group Survey, U. S. Nav. M. Bull. **38**: 297-299 (July) 1940. Behrens, C. F.; Hilleboe, H. E.; Long, H. F. A., and Yerushalmy, J.: Evaluation of Comparative Efficiency of Various Methods of Mass Radiography, ibid. **45**: 635-646 (Oct.) 1945.

6. Anderson, R. J., and Blomquist, E. T.: Tuberculosis Control: A Total Program, Pub. Health Rep. **66**: 132-138 (Feb. 2) 1951.

than those who have a positive diagnosis. The former will not report for follow-up examination with the regularity of the latter. Statistical value is increased if visits to the clinic and physician are regularly spaced and definite in number and if they are uniformly reported. It has been learned that the follow-up is greatly facilitated if the patient is carefully informed of the nature and extent of his disease. Experience proves the necessity for initial examination of every positive case at a central diagnostic clinic. There the patient is interviewed by a competent chest physician who gives him a brief explanation of the roentgenographic findings and what they may mean and who reassures the patient to allay unreasonable fears, but without minimizing the possible seriousness of the nature of the lesion. An explanation is given of the need for further clinical and laboratory studies and of continued observation and future roentgenographic examinations. At this point, the patient is referred to the private physician of his choice and told to rely on his advice. The private physician is then notified and given all available data concerning the patient and is requested to make periodic reports at definite dates. At the same time, the physician is informed of the facilities available at the central diagnostic clinic for laboratory studies, social service investigation, and services of visiting nurses. If the patient has no physician and is a proper clinic case, his care and management are undertaken by a clinic. The health department is responsible for making certain that the case receives the necessary supervision.

Every survey will disclose a certain number of cases of cardiac disease and other pathological conditions. Experience has shown that these patients should also report initially at the diagnostic clinic. This will extend the scope of a tuberculosis survey, but it will benefit a considerable number of patients. In addition, it has certain public health aspects in that it brings under observation diseases that cause serious disability, with its economic consequences to the patient and the community, if left untreated. The point to be emphasized here is that all the matters mentioned above should be the subject of careful and detailed preliminary planning by local persons in order that the survey data may be preserved and be available for follow-up study.

The next point to be emphasized is that no mass screening effort is complete until every person examined has received a final diagnosis and is assigned to a definite category for follow-up and treatment. Surveys throughout the nation have shown that few if any communities are equipped with complete diagnostic facilities. The lack is especially noticeable in clinic laboratories, since the final diagnosis often depends on examination of gastric washings, culture of the tubercle bacillus, or guinea-pig inoculation, procedures that many laboratories are not equipped to perform. There is also a shortage in many communities of hospital beds to care for all who should be hospitalized, an insufficient number of visiting nurses to assist in instruction and care of those who must be confined to their homes, and a general lack of social workers to secure the information on which the economic condition and family relationships must be evaluated in so far as they affect treatment. The strange argument is sometimes advanced that since there is a general lack of facilities for care of tuberculous patients, mass surveys are an expensive and useless effort because the affected persons found cannot be properly treated. Surveys have demonstrated repeatedly that the need disclosed by a survey furnishes the necessary stimulus to increase the facilities for diagnosis and treatment. Certainly no adequate program for prevention and cure of tuberculosis will be undertaken by any community when it is ignorant of the extent of the need for such a program.

RESULTS OF WASHINGTON, D. C., SURVEY

One of the inherent limitations of a mass survey is the fact that it will include only a certain percentage of the population. A follow-up study of the Washington, D. C., community-wide survey has been completed and will be published at an early date. In this it is shown that only 41% of the estimated population was examined, representing approximately 39% of the white and 45% of the nonwhite population. In terms of the population considered eligible for roentgen examination (persons 15 years of age and over) the response was 50%, representing about 47% of the eligible white population and 53% of the nonwhite. A projection of the prevalence rates in the examined segment of the population to the unexamined population permits an estimate of 10,500 residents of the District of Columbia who had tuberculosis in 1948 at the end of the survey. Sixty-five per cent of these cases were known to the health department and 35% were unknown. The percentage of known cases was greatly increased over what prevailed before the survey, but the fact that there are at all times a large number of unknown cases indicates the necessity for continuing the efforts to screen out the cases of tuberculosis. These efforts in the District of Columbia have resulted in more than 150,000 examinations since the end of the survey. One of the values of a community-wide mass survey is the disclosure of localities or groups in which there is a high prevalence rate where screening efforts may be concentrated.

A significant disclosure in the District of Columbia follow-up study is that one-fourth of the tuberculosis patients were 55 years of age and older despite the fact that this age group comprises only 10% of the population examined. This disproportion holds both for whites and nonwhites. The fact that the disease is about four times more prevalent in the age group over 54 than in the group from 15 to 54 is of real practical importance. Case finding must be directed with increasing intensity toward the older age group. The follow-up report also emphasizes the importance of morbidity rather than the death rate as a measure of the prevalence of tuberculosis. It states that "The former emphasis upon the death-rates as a method of estimating the degree of control of tuberculosis has given many groups in our community a false sense of security." The facts show that this is especially true of the group over 54 years of age, since the response during the survey in the 15 to 54 age group was 53% as compared to 34% in the over 54 age group. The survey also disclosed the fact that at the end of the survey 79% of the cases estimated to exist in the 15 to 54 age group were known to the health department while only 39% of those in the over 54 group were known.

The District of Columbia follow-up report, to which reference is made above, was planned at the beginning of

the survey. Such a report is believed to be a necessary part of any mass screening effort. The report contains 12 statistical tables and many valuable recommendations based on them. Besides the statistical tables, there are several tables of proposed tabular methods for organizing surveys, which offer valuable suggestions for those who are undertaking new surveys.

The final stage of the Washington, D. C., survey is now being planned. It consists of detailed studies by the original medical technical committee, with all of its subcommittees, of the follow-up report. The committee plans, as the result of these studies, to make recommendations to the government of the District of Columbia, to its health department, and to the general community for improvement in many aspects of the tuberculosis program in Washington, D. C., and its surrounding metropolitan area. The report indicates that there is still much arduous work ahead for everyone engaged in the battle against tuberculosis, but the knowledge brought forth by the survey furnishes, for the first time, a sound foundation for future planning.

COMMENT AND CONCLUSIONS

All those who are engaged in tuberculosis case finding must take encouragement in the formerly gradual and recently rapid decrease in the death rate from this disease. The decline has been continuous since the year 1900, when more than 200,000 persons died of tuberculosis in the United States, to the year 1950, when there were 33,557 deaths. The following table shows the death rate and total deaths by year from 1945 to 1950.

It should be emphasized again that the death rate tells only part of the story, that there is still in every community a great reservoir of known and unknown cases of tuberculosis, and that the disease is still the first cause of death in the age group 15 to 34. Everything points to the need for stepping up the program of case finding throughout the nation and to the need for greatly increased facilities for care of tuberculous persons, but there are now definite signs that the battle against the disease is reaching its final stages.

Tuberculosis Mortality in the United States, 1945 to 1950

Year	Number per Year	Rate per 100,000
1945	52,320	40.1
1946	50,911	36.4
1947	48,064	33.5
1948	43,833	30.0
1949	38,870	26.3
1950	33,557	22.2

1835 Eye St., N.W. (6).

RESULTS OF KENNY TREATMENT OF ACUTE POLIOMYELITIS

PRESENT STATUS OF THREE HUNDRED NINETY-ONE PATIENTS TREATED BETWEEN 1940 AND 1945

Miland E. Knapp, M.D., Lewis Sher, M.D.
and
Theodore S. Smith, M.D., Minneapolis

In the fall of 1940, arrangements were made to investigate and attempt to evaluate the Kenny treatment of poliomyelitis at the Minneapolis General Hospital. At first, treatment was given by Sister Kenny herself but later was administered by therapists whom she had trained and who worked under her supervision. A preliminary report [1] was published in 1941 covering the treatment of 26 patients. At that time it was stated that the results seemed to be satisfactory but that "several years must elapse before a definite evaluation of the method can be made in terms of final results." The present study covers a follow-up period ranging from 5 to 10 years. It seems that still more time must be allowed before "final results" are determined. The patients reported in this study were treated under the direct supervision of Miss Kenny during the acute stage; however, many have been under the care of various physicians and surgeons since discharge from the hospital. All surgical procedures have been performed elsewhere.

The treatment has been described by various authors.[2] Briefly, it consists of the following measures: (1) methods of overcoming muscle shortening or "spasm"; (2) a comprehensive technique of muscle reeducation, emphasizing coordinate function rather than strength; (3) avoidance of immobilization by casts or splints whenever possible, especially in the early stages; (4) avoidance of use of braces or other supports, except when they are necessary to make function possible or to prevent development of deformities. Successful use of the method requires that it be conducted by well-trained therapists working under the direct supervision of physicians who are particularly interested in muscle function and who are also well grounded in the underlying physiological principles of the treatment methods.

Because of the known variability in the severity of epidemics and the slow development of deformities that occur in poliomyelitis, it was thought that a five year follow-up was necessary. Since the Kenny treatment is designed especially for acute cases and should be started as soon as possible after the onset of the disease, it was decided to include only patients who were admitted to the hospital within four weeks after onset of the disease. Follow-up examinations were made by the personnel of

1. Cole, W. H., and Knapp, M. E.: The Kenny Treatment of Infantile Paralysis: A Preliminary Report, J. A. M. A. **116**: 2577-2580 (June 7) 1941.

2. (*a*) Cole and Knapp.[1] (*b*) Cole, W. H.; Pohl, J. F., and Knapp, M. E.: The Kenny Method of Treatment for Infantile Paralysis, Publication 40, New York, the National Foundation for Infantile Paralysis, Inc., 1942. (*c*) Kenny, E.: Infantile Paralysis and Cerebral Diplegia: Methods Used for the Restoration of Function, Sydney, Australia, Angus and Robertson, Ltd., 1937. (*d*) Kenny, E.: The Treatment of Infantile Paralysis in the Acute Stage, Minneapolis, The Bruce Publishing Company, 1942. (*e*) Pohl, J. F., and Kenny, E.: The Kenny Concept of Infantile Paralysis and Its Treatment, Minneapolis, The Bruce Publishing Company, 1943.

Elizabeth Kenny Institute whenever possible. The following form was sent for completion to patients who could not or would not return for examination:

I. Patient made complete recovery.
II. Patient has normal function with minor tightness or weakness.
III. Patient has moderate weakness or tightness but can carry on ordinary activities.
  A. Uses sticks
  B. Steel tongue
  C. Ankle brace
  D. Opponens splint
  E. Other (state what)
IV. Patient has severe weakness or deformity which limits activities.
  A. Single long leg brace
  B. Two long leg braces
  C. Underarm crutches
  D. Wheelchair
  E. One arm paralyzed
  F. Both arms paralyzed
V. (1) Has an operation been performed? If so, what kind and by whom?
  (2) Is there a spinal curvature present? Does patient wear a corset or back brace because of curvature?
  (3) Is bone shortening present?
  (4) If patient is under the care of another physician, please give his name and address.
VI. Patient has difficulty swallowing.
  A. Solids
  B. Fluids
  C. Eats very slowly
  D. Chokes
VII. Patient has difficulty with speech. Nasal tone . . .
VIII. Patient has facial paralysis or weakness.
IX. Patient cannot cough effectively.
X. Patient considers himself completely normal.
XI. If patient has expired, please give date and cause.
XII. Remarks or other involvements or complications, such as fractures or other diseases.

According to the information obtained, the patients followed were classified into four groups as follows:

Grade 1—Completely Normal.—Completely normal patients have no residual paralysis or muscle tightness. They are able to do all the tests given at time of discharge, which are as follows: (1) come to sitting position unassisted and touch head to knees in long sitting position; (2) hold lower extremities and trunk off table at the same time, balancing on the buttocks; (3) arch back posteriorly, holding lower extremities and trunk off table in prone position; (4) in erect position, bring each knee to nose; (5) kick buttocks with heels; (6) stand and walk on heels; (7) stand and walk on toes; (8) abduct arms and hold against resistance; (9) squeeze with fingers; (10) run and skip.

Grade 2—Essentially Normal.—Essentially normal patients may have minor weaknesses or tightnesses but not severe enough to interfere with apparent normal function. A patient may not be able to walk on his heels, although no muscles are nonfunctioning, or he may not be able to bounce his head to his knees in the long sitting position, or he may not be able to come to a long sitting position unassisted, although the abdominal muscles apparently are strong.

Grade 3—Moderately Weak.—These patients have moderate weakness or tightness that interferes with normal function but does not handicap them severely. The patient may need to use sticks to walk with a normal gait, or an arm may be weak but still useful.

Grade 4—Severely Disabled.—These patients have severe disability that definitely limits function; for example, denervation of an upper extremity, sufficient weakness of a lower extremity to require a long leg brace, or contractures limiting function. Detailed information was obtained from the surgeons who performed operations on the patients.

CASE DISTRIBUTION

During the period covered by this study, 604 patients were admitted to the poliomyelitis treatment unit. In 21 patients, diagnoses other than poliomyelitis were made: cerebral palsy in 5, upper respiratory tract infections or pneumonia in 4, encephalitis in 4, polyneuritis or the Guillain-Barré syndrome in 3, and brain abscess, measles myelitis, muscular dystrophy, acute myositis, and osteomyelitis in 1 each. One hundred and five patients were admitted later than four weeks after onset and were not included in the follow-up study. Four hundred and seventy-eight patients were admitted within four weeks of onset. Of these, 150 had nonparalytic cases, 25 had bulbar involvement, and 303 had spinal paralytic (including bulbospinal) involvement. Two hundred and sixty-one patients were admitted in the first week of the disease, 136 in the second week, 51 in the third week, and 29 in the fourth week. One patient with acute bulbar poliomyelitis died shortly after admission to the hospital, and the exact week of onset was not determined. Follow-up information was obtained by either letter or examination in 391 (81.8%) of these cases.

RESULTS

During the years 1940 through 1942, the Minneapolis General Hospital contagious division was the only hospital in Minneapolis accepting patients with acute poliomyelitis. Therefore, the mortality statistics are not accurate for this survey, since every death is included in these figures whether or not the patient was receiving the Kenny treatment. Many were treated by the usual respirator care and supportive measures. While all the deaths are included, many of the surviving patients are not included because they were not under the care of the Kenny unit. Thirty-seven patients died of acute poliomyelitis. Of these, 12 were bulbar cases, and 5 more had spinal as well as bulbar paralysis. Five patients died during the follow-up period. In only one of these was the poliomyelitis a contributing cause; this patient had spent two years in the hospital with severe respiratory involvement and died of pneumonia four years after onset of poliomyelitis. One other patient died of pneumonia four years later. The other three deaths were accidental: one patient was killed in military service, one was killed in an airplane accident, and the third drowned.

Of the remaining 348 followed patients, 2 could not be graded, 1 because of muscular dystrophy and 1 be-

cause of tuberculosis. The 346 living patients in whom treatment was started within four weeks of onset were classified as follows:

Grade 1	156 (45.1%)
Grade 2	83 (24.0%)
Grade 3	78 (22.5%)
Grade 4	29 (8.3%)

Since grades 1 and 2 are essentially normal, 69.1% of the patients are essentially normal, and 30.8% have varying degrees of residual disability.

Of the patients with grade 3 results, 48 walk without support; 6 of these wear a heel elevation because of a short leg, 1 uses a Whitman arch, and 7 have had surgical treatment. These last seven patients had the following operations: one, plantar fasciotomy plus epiphyseal stapling; one, gastrocnemius lengthening; one, epiphyseal arrest; two, subastragalar arthrodeses; one, plantar fasciotomy plus achilles tendon lengthening; one, bilateral plantar fasciotomy. Thirty patients use some support for walking: 22 use a cane or Kenny sticks,* 7 wear a below-knee brace, 6 use a steel shoe tongue, 1 wears a corset, and 1 wears a body jacket. Six of these 30 have had operations; 2 were epiphyseal staplings, 2 were subastragalar arthrodeses, 1 was a bilateral subastragalar arthrodesis, and 1 was transfer of the biceps femoris tendon to the patella plus a spinal fusion. All six patients still use sticks for walking, despite the operations.

Twenty-nine patients are classified as grade 4. Six have one useless arm but are otherwise normal. They are all pursuing useful occupations. Eight patients use a wheel chair for practical locomotion; two of these are able to walk with braces and crutches, and two can walk without braces by the use of sticks or by grasping another person's arm for support. All in this group have involvement of the upper extremities and trunk as well as the lower extremities. Five patients use two long leg braces. Six use one long leg brace; one of these has a short brace on the other leg. Seven patients use underarm crutches or Kenny sticks in addition to the braces. One patient with severe involvement walks without apparatus and does not use a wheel chair. One patient remained bedfast and died four years after onset. One patient has a flail leg and has had an ankle stabilization and tensor fasciotomy. Another, although both legs are essentially zero in power, walks with two sticks without braces.

SURGICAL TREATMENT

Surgical procedures were done by various surgeons on 18 patients, 4.6% of the entire series. Neurotripsy was done on four additional patients. Twenty-six operations were performed on these 18 patients (bilateral operations are considered as two procedures). Nine patients had multiple operations. The operations done were ankle stabilization in 7, tendon transplantation in 2, tensor fasciotomy in 4, plantar fasciotomy in 5, achilles tendon lengthening in 2, epiphyseal arrest in 5, and spinal fusion in 1.

Eleven of the patients treated surgically were females and seven were males. The age at the time of onset ranged from 6 months to 28 years, the average age being 7.3 years. The average age at onset of those in whom leg equalization was done was 3.8 years. It is interesting to note that when classified according to number of weeks from onset of poliomyelitis to beginning of treatment the percentage of operations increases steadily with increasing length of this interval (table 1). This may indicate that early treatment helps to prevent the need for surgery. The same relation between time of start of treatment and incidence of operations is found when only the living spinal paralytic patients (excluding the nonparalytic and bulbar patients) are considered.

SCOLIOSIS

The problem of scoliosis is always of importance in poliomyelitis. For the purpose of this study, it was thought advisable to define clinical scoliosis as one in which a line drawn from the center of the first dorsal vertebra to the center of the fifth lumbar vertebra in a standing roentgenogram does not lie within the bodies of the vertebrae throughout the dorsal and lumbar spine. In accordance with this definition, eight patients in this

TABLE 1.—*Relation Between Incidence of Operations and Length of Time from Onset to Treatment of Poliomyelitis*

	Week of Onset			
	1st	2d	3d	4th
Patients surgically treated	5	8	3	2
Total followed patients	210	118	39	23
% surgically treated	2.3	6.7	7.8	8.7
Living spinal paralytic patients	101	84	26	17
% surgically treated	4.9	9.5	11.5	11.8

TABLE 2.—*Relation Between Incidence of Scoliosis and Length of Time from Onset to Treatment of Poliomyelitis*

	Week of Onset			
	1st	2d	3d	4th
Patients with scoliosis	1	3	3	1
Total followed patients	210	118	39	23
% with scoliosis	0.4	2.5	7.7	4.3
Living spinal paralytic patients	101	84	26	17
% with scoliosis	0.98	3.5	11.5	5.9

series had clinical scoliosis. This is 3.1% of the spinal paralytic patients followed or 2% of the entire group followed. The ages of these patients at the time of onset of poliomyelitis ranged from 3 to 13 years. One patient had spinal fusion done. Spinal fusion was advised in another case, and the child was admitted to the State Crippled Children's Hospital, where he stayed for five months. The curvature was corrected from 80 to 30 degrees by casts. Surgery was not done because of a severe atopic eczema, so the cast was finally removed and the patient was discharged. The curve has returned to the original 80 degrees. Three of the other patients wear body jackets. Again, there is a correlation between incidence and length of time from onset to treatment (table 2).

SUMMARY

A statistical study of the condition in 1950 of the patients with acute poliomyelitis treated at the Elizabeth Kenny Institute from 1940 through 1945 is reported. This represents a follow-up ranging from 5 to 10 years.

* A Kenny stick is made by cutting off a standard crutch 1 in. below the elbow and riveting a cuff to the upper end of the cut uprights.

Follow-up was accomplished in 81.8% of the cases (391 of 478 patients); 7.7% died in the acute stage; of the living patients, 69.1% are essentially normal, 22.5% have mild to moderate disability, and 8.3% have severe disability; 5.2% have had operations, and 2% have scoliosis. Tabulation according to weeks elapsed from onset to treatment seems to indicate that early treatment decreases the necessity for operation and the incidence of scoliosis.

920 S. 7th St. (2) (Dr. Knapp).

FACTS ABOUT URETEROSIGMOIDOSTOMY

C. D. Creevy, M.D., Minneapolis

It has been stated that cystectomy and ureterosigmoidostomy must be used for early cancer of the bladder if the results of treatment are to improve. The purpose of this paper is to inquire whether the prognosis of ureterosigmoidostomy itself, quite apart from that of the cancer, is good enough to justify this attitude at the present time. Marshall [1] has emphasized that poor results commonly follow current methods of treatment of vesical cancer that are less radical than cystectomy. In a review of 300 patients treated by irradiation, he found that the average post-treatment survival was only 24.4 months as compared to an average survival after diagnosis of 18.8 months in 61 untreated patients gathered from the literature; of the irradiated patients, only 9.2% were living and well five years after treatment. This is a convincing argument for radical operation until one considers that his series includes many patients with lesions inoperable by any ordinary criteria and that Ferris and Priestley (table 2) had only 19.2% of five year survivals after cystectomy and transplantation of the ureters into the colon for carcinoma of the bladder.

These figures concern cancer of the bladder in general rather than early lesions and so are useless for this present discussion. Papilloma is excluded from consideration. I propose to use the terms "early" and "superficial" cancer interchangeably, since Jewett [2] has shown the importance of depth of infiltration into the wall of the bladder in determining prognosis. Seventy-three and seven-tenths per cent of his patients whose lesions did not penetrate beyond the superficial fibers of the detrusor muscle were alive and well five years after operation, while only 3.2% of those with deep penetration of the detrusor or with extravesical extension survived that long. His observations have been confirmed by Colby and Kerr,[3] who found that methods other than cystectomy yielded but 11% of five year survivals when there was deep penetration of the muscular coat of the bladder, while all patients with superficial lesions survived the five year period. Flocks,[4] in a study of 540 patients with malignant growths of the bladder, stated that only 1.2% of those whose tumors invaded the deep layers were well after five years, in sharp contrast to 39.7% of those with superficial invasion of the detrusor muscle and to 77.4% of those whose lesions were confined to the mucosa.

If one could be reasonably sure that ureterosigmoidostomy itself would permit a long, comfortable postoperative life in a high proportion of patients, quite apart from the effects of the malignant lesion, one would feel obliged to employ radical methods for early or superficial lesions. But does it do so? At present, owing to modern surgical techniques and to the ability of the antibiotics to reduce the intestinal flora before operation and to minimize postoperative infection of the wall of the bowel around the anastomosis, the surgical mortality of ureterosigmoidostomy has declined considerably. It was 12.5% in the 144 cases of exstrophy reviewed by Harvard and Thompson,[5] but some of their patients were treated as long as 35 years ago. Cordonnier and Lage [6] have recently reported 54 consecutive operations without a death, most of them in old people with cancer. This is a very striking improvement when compared with the 34% in 250 cases collected from the literature prior to 1939 by Hinman.[7]

What happens to the patient after ureterosigmoidostomy has been performed? This question can best be answered by studying the effects of the operation in exstrophy of the bladder, because these patients are young and elastic, do not have arteriosclerosis, and are not subject to the hazards of local recurrence or metastasis. Many instances of prolonged survival after transplantation of the ureters for exstrophy are known. In 1941 Stevens [8] saw a patient 43 years after operation; despite an elevated nonprotein nitrogen level, he was comfortable. Stevens found in the literature reports of 11 other patients who had lived or were living 20 to 30 years after operation. The literature contains reports of the birth of 35 babies to 28 women with ureteral transplantations for exstrophy. While these data prove that ureterosigmoidostomy is compatible with long postoperative survival, it is not known that this is true of any considerable proportion of the patients.

From the Urological Division of the Department of Surgery, the Medical School.

Read before the Section on Urology at the 101st Annual Session of the American Medical Association, Chicago, June 11, 1952.

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2. Jewett, H. J., and Cason, J. F.: Infiltrating Carcinoma of Bladder: Curability by Segmental Resection, South M. J. **41**: 158, 1948.

3. Colby, F. H., and Kerr, W. S., Jr.: Carcinoma of Bladder: Evaluation of Total Cystectomy and Other Methods of Treatment, New England J. Med. **244**: 504, 1951.

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8. Stevens, A. R.: Longevity Following Uretero-Intestinal Anastomosis: Report of Cases, J. Urol. **46**: 57, 1941.

HAZARDS OF URETEROSIGMOIDOSTOMY

There are many objections to all types of anastomoses between the ureters and the bowel. While the ureters of fowls normally empty into the cloaca without disadvantage, surgeons have not yet succeeded in imitating nature dependably in this regard when they unite the normally sterile kidneys of man to the colon with its normally infected contents. Whether this is because fowls possess a powerful natural immunity to the organisms in their colons or whether the mechanism for preventing reflux of feces into the ureters is highly efficient is not known. G. G. Smith [9] emphasizes the danger of renal infection after ureterosigmoidostomy when he says, "but until the late results of ureteroenterostomy show a much lower incidence of renal failure, one hesitates to employ the method for a condition which is not in itself dangerous to life."

At least four dangers threaten the kidneys after implantation of the ureters into the bowel. The first of these is direct ascent of the ureteral lumina by bacteria from the colon. Hinman [7] has shown that the kidneys of the dog often become infected when the ureters are laid into a submuscular trough in the wall of the sigmoid without opening either organ. This suggests that the bacteria may ascend the lymphatics of the ureter.

Concerning a second danger to the kidneys, there is evidence that intracolonic pressure can force intestinal contents into the ureters and renal pelves, particularly after mucosa-to-mucosa anastomoses that make no provision for the prevention of reflux. Gas was observed in the renal pelves at roentgenography in 5 of 54 patients by Cordonnier and Lage [6]; this has been confirmed by others. Whisenand and Moore [10] saw gas and feces escape under pressure from nephrostomy tubes placed in the kidneys prior to a "mucosa-to-mucosa" anastomosis. It seems probable that the severity of reflux can be lessened by combining terminolateral anastomosis of the ureter to the bowel with the conventional submuscular tunnel. This view is supported by the work of Riba [11] in the dog. He found that of 21 dogs subjected to ureterosigmoidostomy only 9 had normal appearing kidneys at autopsy, and all 9 had had the "Leadbetter" type of anastomosis. However, Baker and Miller,[12] having observed reflux into the ureters of contrast medium injected into the rectum in five of seven patients studied after ureterosigmoidostomy, made experimental studies in the dog (they will be cited below) that indicate that the rectal pressure can ultimately overcome even an initially normal ureteral orifice.

One could quote statistics at length to establish the frequency of renal infections after anastomosis of the ureters to the colon, but a few will suffice for the purpose of this present study. Harvard and Thompson [5] attributed to pyelonephritis 65.7% of late deaths and 50% of surgical deaths after ureterosigmoidostomy for exstrophy. In Smith's [9] series of 66 ureterointestinal implantations, there were 12 surgical deaths, 2 of them from pyelonephritis; nine more patients died of "renal failure" within two years of operation. Four patients required cutaneous ureterostomy for infected hydronephrosis, while three others had poor renal function at the time of follow-up. Thus, renal disease was a serious problem in 18 of the 54 patients (33.3%) who survived operation. Twenty-one of the 54 patients (38.9%) of Cordonnier and Lage [6] had some degree of renal infection within two and one-half years of operation. Since Harvard and Thompson's [5] patients were followed for much longer periods than were the others, it seems likely that the longer the communication between urinary tract and bowel exists, the higher the incidence and the greater the seriousness of the resulting renal disease.

A third source of renal damage in ureterosigmoidostomy is stenosis of the anastomosis. This may involve either the relatively avascular cut end of the ureter or the incision in the wall of the colon and may result at first from inflammatory edema and later from scarring. Stenosis occurring at the cut end of the ureter can presumably be minimized by accurate anastomosis of the split end of the ureter to the mucosa of the colon; the frequency of stenosis from the scar in the wall of the bowel may perhaps be significantly reduced by the administration of antibiotics before operation and during convalescence. The importance of stasis in predisposing to infection is too well known to require comment.

TABLE 1.—*Summary of Data from Literature Indicating Effect of Ureterosigmoidostomy on Urographic Appearance of Kidneys*

Author	No. of Cases	Interval, Yr.	Kidneys Normal	
			No.	%
Lapides	22	½-1	5	22.7
Pool and Cook	43	½	5	11.5
Dean	99	½	42	42.4
Harvard and Thompson	41	½-35	5	12.2
Creevy and Reiser	53	½-16	23	43.4
Total	258		80	31.0

Since bacteria surround the end of the ureter, since postoperative stenosis is so common, and since the intracolonic pressure may have harmful effects, it is obvious why ureterosigmoidostomy endangers the kidneys. In our own series of 53 patients subjected to urography at intervals varying from one month to 16 years after ureterosigmoidostomy (most of them within the first year), only 43.4% had urographically normal kidneys. Table 1 summarizes some data from the literature indicating the effect of ureterosigmoidostomy on urographic appearance of the kidneys: of 258 patients studied six months or longer after operation, only 80, or 31%, had urographically normal kidneys. It is worth noting that the highest proportion of abnormal kidneys was found in the series followed for the longest average time (Harvard and Thompson). Inasmuch as pyelonephritis must be fairly severe to alter the urogram if unaccompanied by hydronephrosis, and since Doroshow and Lapides have pointed out that infection may produce tubular changes with impairment of function without alteration of the

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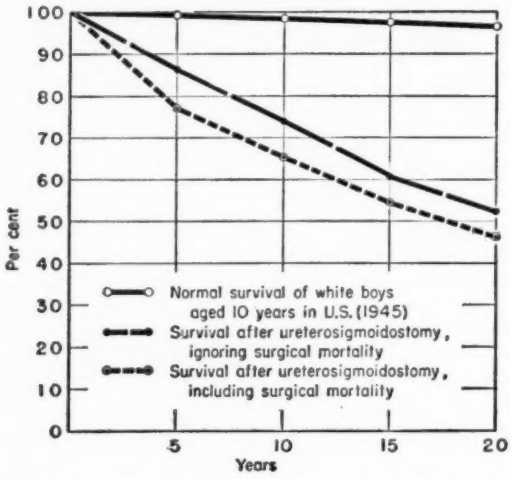
10. Whisenand, J. M., and Moore, E. V.: Hydrodynamics of Upper Urinary Tract After Mucosal Ureterosigmoidostomy: Case Report, J. Urol. **65**: 564, 1951.

11. Riba, L. W.: Uretero-Intestinal Anastomosis, J. Urol. **67**: 284, 1952.

12. Baker, R., and Miller, G. H., Jr.: The Physiology of the Ureteo-Intestinal Anastomosis: I. Ureteral Reflux, J. Urol. **67**: 638, 1952.

pyelogram, it is safe to assume that the true incidence of renal damage is considerably higher than one would infer from these data.

A fourth disadvantage of diverting the urine into the colon is the occurrence of hyperchloremia and secondary acidosis from the absorption of urinary chlorides from the bowel. Although this rarely causes any serious difficulty except in the presence of renal damage that interferes with the tubular excretion of chlorides, it has been reported to follow ureterosigmoidostomy in as high as 79% of the patients. In our own series of 81 postoperative patients whose blood urea nitrogen, plasma chlorides, and carbon dioxide combining power were measured between one month and 16 years after operation, hyperchloremic acidosis was present in 59.2%, although only 10 patients, or 12.3%, had symptoms. This imbalance was detectable 3 times as often when the urea nitrogen level was elevated as when it was normal, and it caused symptoms 10 times as frequently in the presence



Normal survival rate of white boys aged 10 years compared with survival rates of 98 patients following ureterosigmoidostomy for exstrophy of bladder.

of grossly impaired renal function as in its absence. Since most of our patients were studied within two years of operation, it seems likely that the final incidence of this complication will be far higher than is indicated by these figures. Although it has been shown that the symptoms of hyperchloremic acidosis can ordinarily be controlled by the administration of a low sodium chloride diet and alkalies, one must remember that, if unrecognized, it can cause chronic ill health and that death may ensue from coma due either to the acidosis itself or to hypokalemia resulting from vomiting and diarrhea.

MORTALITY AND SURVIVAL DATA

What is the outlook following ureterosigmoidostomy in which there is no cancer to affect the prognosis? The only sizable group of this type followed for a long period of time is that of Harvard and Thompson,[5] who traced 128 of 144 patients whose ureters had been transplanted into the colon for exstrophy of the bladder. The surgical mortality was 12.5%, roughly half of it from pyelonephritis. Forty-one of the survivors had excretory urograms made between 1 and 35 years after operation; only five, or 12.2%, had urographically normal kidneys. Renal failure caused 65.7% of the late deaths, and 50% of the survivors had had chills and fever at some time or other after operation. Eighty-five of 98 traced patients had survived five years or longer, a mortality after discharge of 13.3% during the first five years, or a survival rate of 86.7%. If one considers the surgical mortality, the survival rate is lower.

One may gain a rough idea of the effect of ureterosigmoidostomy for exstrophy upon survival rates by comparing the survivals among the 98 traced patients operated upon before 1942 (Harvard and Thompson) with those of normal white boys aged 10 in the United States as calculated in 1945 * and shown graphically in the figure. The age 10 was chosen arbitrarily as the average at operation, and boys were selected because exstrophy is approximately twice as common in males as in females. On this basis it can be seen that ureterosigmoidostomy for exstrophy reduces expected survival during the first 20 years after operation by more than 40%, and by 50% if the surgical mortality is taken into account. Moreover, Harvard and Thompson considered that two-thirds of the patients who were still alive in 1947 had evidence of pyelonephritis. It is clear from the graph that the survival rate declines further and further below the normal with the passage of time, indicating that longer survival means more renal damage.

Mindful that this present discussion is concerned with early or superficial cancer of the bladder, what can one expect from methods of surgical treatment less radical than ureterosigmoidostomy and cystectomy? Combining the series of Jewett, of Colby and Kerr, and of Flocks, it is found that 155, or 78.3%, of 198 patients with such lesions were alive and well five years or longer after transurethral resection, segmental resection, or suprapubic or transurethral electrocoagulation. In other words, the mortality during the first five years after leaving the hospital following ureterosigmoidostomy for exstrophy of the bladder is about 13.3%; that following the conservative surgical treatment of early or superficial cancer of the bladder is 21.7%, a difference of 8.4% in favor of the former. It is plain that the margin in favor of ureterosigmoidostomy for exstrophy would shrink considerably if cancer were introduced into the picture. The discrepancy is further reduced by the difference in surgical mortality between ureterosigmoidostomy with cystectomy and the more conservative surgical methods. Table 2 shows that the risk of the former averaged 21.8% in 703 cases reported in the literature, while table 3 puts the risk of the latter at 6.2% in 954 cases. Thus, the difference in surgical mortality more than nullifies the theoretical advantage of the more radical operation.

SUPPLEMENTAL TECHNIQUES

It is reasonable to say, therefore, that the widespread employment of ureteral transplantation and cystectomy for early or superficial cancer of the bladder must await the development of methods of diversion of the urine

* Courtesy of Mr. Reuben Jacobson of the Actuarial Department of the Northwestern National Life Insurance Company of Minneapolis.

that are less harmful to the kidneys than those thus far available. While current applications of the antibiotics have reduced the surgical mortality and probably the incidence of postoperative stenosis of the ureters from infections in the wall of the bowel, and while they lessen the seriousness of the individual attack of postoperative pyelonephritis, they cannot protect the kidneys indefinitely from the inherent hazards of ureterosigmoidostomy, both because of the usual rise in bacterial resistance to the antibiotics during prolonged administration and because of toxic effects of the drugs when given over long periods.

A more practicable method of reducing the dangers of renal infection and perhaps of ureteral stenosis as well may lie in the use of a terminal colostomy above the anastomosis to provide a relatively clean reservoir for the urine. This was suggested in 1895 and again in 1907 but never found wide favor, presumably because of the inconveniences of colostomy. While these are great, they are negligible in comparison with the ill effects of the urinary obstruction and infection inherent in the usual ureterosigmoidostomy, provided that colostomy is effective in protecting the kidneys. That this may be so is suggested by the recent experience of Boyce and Vest, who made a preliminary terminal colostomy with closure of the distal loop in a patient with exstrophy. They irrigated the loop with suspensions of antibiotics, then made a vesicosigmoidostomy to preserve the normal ureteral orifices. Urine secured from the rectum nine months later was sterile. This would appear to argue for a widespread trial of colostomy in conjunction with ureterosigmoidostomy. It may be done first and the bowel below it "cleaned up" by the instillation of antibiotics as suggested by Boyce and Vest, or the bacterial flora may be greatly reduced or even eliminated by the preliminary administration of the insoluble antibiotics in order that the colostomy and ureteral implantation may be done at the same time.

Although the resulting reduction in the exposure of the incision in the wall of the colon and of the ureters and kidneys to infection should do much to improve the long-time outlook after ureterosigmoidostomy, Baker and Miller [12] have found experimental evidence, already cited, that this is not enough to protect the kidneys completely. They made a preliminary colostomy in the dog and later divided the urethra and made an anastomosis between the bladder and the sigmoid, the latter in order to preserve the normal valvular action of the intramural ureters. After a considerable interval, there developed in these dogs a thickening of the mucosa of the intramural ureters with secondary infected hydronephrosis. Since contrast medium injected into the rectum reached the kidneys in three of four dogs, Baker and Miller concluded that the intrarectal pressure had damaged the upper urinary tract by producing regurgitation of urine and suggested that this might be prevented by anastomosing the ureters to the middle of the descending colon above the rectosigmoid reservoir, surmising that the intracolonic pressure would be lower, although they presented no evidence to that effect. Since they apparently made no effort to sterilize the distal loop of the colon, their experiments are not strictly comparable to the clinical experiment of Boyce and Vest. It seems likely that residual bacteria in the distal loop of the colon may have been responsible, at least in part, for the changes in the intramural ureters that led to reflux. At any rate, these avenues are worth exploring clinically in the hope that they may improve the prognosis of ureterosigmoidostomy sufficiently so that it may be employed with a clear conscience in early or superficial cancer of the bladder, a procedure that does not at present appear to be justified.

It is not the intention of this paper to suggest that the use of ureterosigmoidostomy for exstrophy and cancer of the bladder be abandoned; rather, it is hoped that efforts will be continued to improve the method of implanting the ureters into the bowel with the objective of improving the late results and of permitting its widespread use for early or superficial cancer of the bladder.

TABLE 2.—*Summary of Data from Literature Showing Surgical Mortality of Ureterosigmoidostomy and Cystectomy for Cancer of the Bladder*

Author	Year	No. of Cases	No. of Deaths
F. Hinman	1939	250	86
G. G. Smith	1947	47	10
Millin	1949	42	1
Ferris and Priestley	1948	119	16
Graves and Buddington	1950	46	4
Marshall and Whitmore	1950	100	16
Dean	1950	99	20
Total		703	153 (21.8 %)

TABLE 3.—*Summary of Data from Literature Showing Surgical Mortality of Conservative Operations for Cancer of the Bladder**

Author	Year	Type of Operation	No. of Cases	No. of Deaths
Beer	1935	E. C. and S. R.	103	21
Marshall	1947	S. R.	83	3
Burford	1950	T. U. R. and F	525	18
Flocks	1951	T. U. R.	293	17
Total			954	59 (6.2 %)

* E. C. = electrocoagulation, S. R. = segmental resection, T. U. R. = transurethral resection, F = fulguration.

SUMMARY

Cystectomy and ureterosigmoidostomy have been advocated for "early" cancer of the bladder. More conservative surgical therapy yields 78% of five year symptom-free survivals in patients with lesions classifiable as early or superficial. Life expectancy is greatly reduced, owing to hydronephrosis and pyelonephritis, when ureterosigmoidostomy is done for benign lesions such as exstrophy of the bladder. If allowance is made for differences in surgical mortality, five year survivals after ureterosigmoidostomy for exstrophy are little if any greater than those after conservative surgical treatment of early or superficial cancer of the bladder. Until some form of urinary diversion can be devised to protect the upper urinary tract more effectively against obstruction and infection, the employment of ureterosigmoidostomy in early or superficial cancer appears to offer no advantage over conservative surgical treatment.

412 Delaware St., S.E. (14).

CLINICAL NOTES

FATAL ASPHYXIA DUE TO MASSIVE HEMOPTYSIS IN A CASE OF MITRAL STENOSIS

Harry J. Isaacs, M.D.
Meyer J. Barrash, M.D.
and
Donald R. Russ, M.D., Chicago

Hemoptysis is a well-known complication of stenosis of the mitral valve; however, the world literature contains but few reported cases of death following hemoptysis from this cause. In the following case a mechanism for the cause of death due to massive hemoptysis is clearly demonstrated.

REPORT OF A CASE

The patient, a 54-year-old Jewish linotype operator, was admitted to Mount Sinai Hospital on April 2, 1950, because of hemoptysis for the previous 24 hours. This episode, during which he coughed up several cupfuls of bright red blood, was the third or fourth and most serious he had had in the preceding five months.

Fig. 1.—Atrial surface of mitral valve showing severe stenosis.

Fourteen years earlier, because of a chronic cough associated with dyspnea and chest pain that was diagnosed as bronchiectasis, he had moved to Arizona, where he did well medically. He returned to Chicago, and, except for the chronic cough, productive of small amounts of whitish or greenish sputum, and slight exertional dyspnea, he had done well until November of 1949, when the first episode of hemoptysis occurred. The episode was short lived and ascribed to bronchiectasis, as were subsequent episodes. He had had scarlet fever in 1910, a herniorrhaphy in 1930, and an appendectomy in 1935. There were no known tuberculous contacts. After the patient had been hospitalized, the relatives made some reference to a "congenital heart disease."

Fig. 2.—Large blood clots filling opened bronchial tree in right lung.

On admission, the patient was slightly pale and apprehensive. Although not dyspneic, he preferred to sit up in bed. The blood pressure was 140/80, the pulse rate 100 and regular, and the respiration rate 20. His temperature on admission was 97 F rectally but rose steadily to 102.8 F before death. The pulse rate increased to 104. Dried blood was noted in the nose and mouth.

The chest was emphysematous. No percussion changes were noted on admission; crepitant rales were heard at the bases posteriorly. The cardiac border was extended to the anterior axillary line in the fifth left interspace. A soft systolic and presystolic murmur was heard at the apex. One observer noted the second pulmonic sound to be accentuated. There were no other findings of consequence.

The next morning, his blood pressure was 104/50, and pulse rate 140, but the patient did not appear to be in acute distress. Impaired resonance and diminished breath sounds were noted at the lung bases posteriorly.

During his first 24 hours in the hospital, the patient frequently had bloody emesis and hemoptysis, which was noted to be over 200 cc. on one occasion. Whole blood was given intravenously. Tracheal aspirations were tried but even with morphine sedation the cough reflex was too active and the bleeding was thought to be increased by the manipulations.

On April 4, the blood pressure was 88/68 and pulse rate 120, and, after receiving 500 cc. of whole blood and 750 cc. of plasma, he appeared improved. Another whole blood transfusion, however, was begun, as the patient continued to cough violently and to bring up fresh and dark blood. Suddenly he sat upright in bed, stopped breathing, and, after a few facial twitching movements, died. In addition to blood, plasma and morphine sulfate, oxygen by tent, desoxyephedrine, and penicillin were given, and digitalization was attempted.

Because of space limitations, some of the bibliographic references have been omitted and will appear in the authors' reprints.

Professor of Medicine and Chairman of the Department, Chicago Medical School, Attending Physician, Mount Sinai Hospital, Cook County Hospital, Columbus Hospital, and Michael Reese Hospital (Dr. Isaacs). Resident in Medicine, Mount Sinai Hospital (Dr. Barrash). Resident in Pathology, Mount Sinai Hospital, and Assistant in Department of Pathology, Chicago Medical School (Dr. Russ).

Laboratory Findings.—From April 2 to April 4 the red blood cell count decreased from 4,750,000 to 3,040,000 and the hemoglobin level from 14.4 gm. to 9.5 gm. per 100 cc. The white blood cell count increased from 20,100 to 25,300. The urine was dark amber in color. The specific gravity was 1.025, and the pH was 5.5. There was a trace of albumin but no sugar. There were 7 to 10 white blood cells and 18 to 20 red blood cells per high power field, with 2 to 3 hyaline casts per low power field. The Kline and Kahn reactions were negative. An electrocardiogram showed sinus tachycardia. A portable roentgenogram made on April 3 revealed a prominent pulmonary conus. The general configuration of the heart was suggestive of mitral stenosis. The hilar vessels were engorged, and the vascular markings throughout were increased. A hazy density (possibly an infarct) was noted in the right hilar region.

Autopsy Findings.—The body was pale. Dried blood was noted in the mouth. The chest was of a barrel-type and contained approximately 150 cc. of clear, straw-colored fluid in each pleural cavity; 60 cc. of similar fluid were present in the pericardial sac. The heart was slightly enlarged, weighing 380 gm. The mitral ostium was markedly stenosed, and fishmouth in appearance (fig. 1). The mitral ring measured 7.5 cm. in circumference and 3.0 cm. from crest to crest. The anterior mitral leaflet presented a large calcified plaque, measuring 1 cm. in greatest diameter. The chordae tendinae were thickened and shortened. The other valves were grossly normal. The right ventricular wall measured up to 7 mm. in thickness.

Microscopic sections of the mitral valve showed it to be thickened by avascular fibrous tissue. The endocardium was generally slightly thickened and fibrous. No unusual changes were noted in the myocardium; in a few foci a small increase in the amount of perivascular fibrous tissue was seen. Aschoff bodies were not found in slides prepared from several blocks of tissue removed from various areas of the organ.

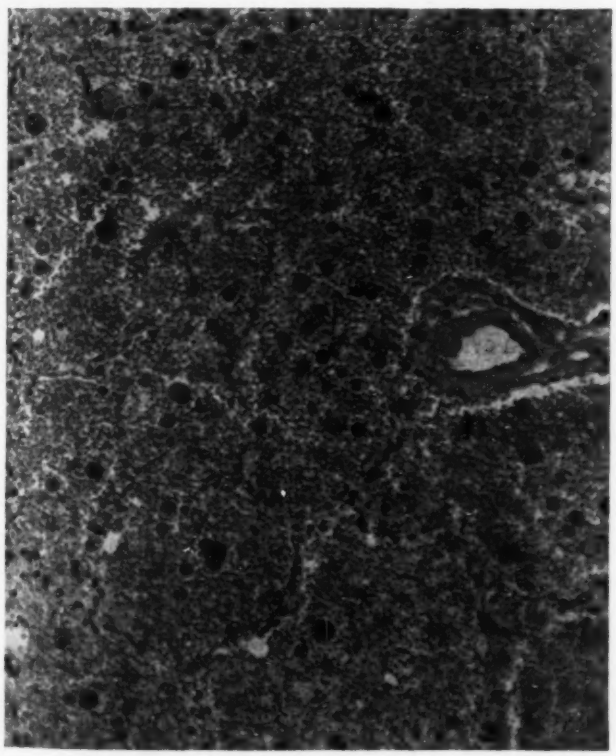


Fig. 3.—Alveoli filled with extravasated blood (× 150).

The lungs were massive, the right weighing 1,600 gm. (normal approximately 450 gm.), the left 1,450 gm. (normal approximately 335 gm.). They had a dark blue color, especially in the lower portions. The upper lobes were well aerated and emphysematous. The lungs were fixed before sectioning by intravascular injection of formaldehyde.

Well-formed blood clots were found in many branches of the bronchial tree (fig. 2). No definite points of bleeding could be found. The cut surfaces of the lower lobes and middle lobe of the right lung oozed blood. No nodularities or consolidations were found. Microscopic study substantiated the gross findings of bronchial blockage by antemortem clots and of severe bleeding. The alveoli were filled with extravasated blood (fig. 3). Grossly and microscopically the pulmonary vessels exhibited moderate atherosclerosis (fig. 4). No bronchiectasis was found. Other findings were not pertinent.

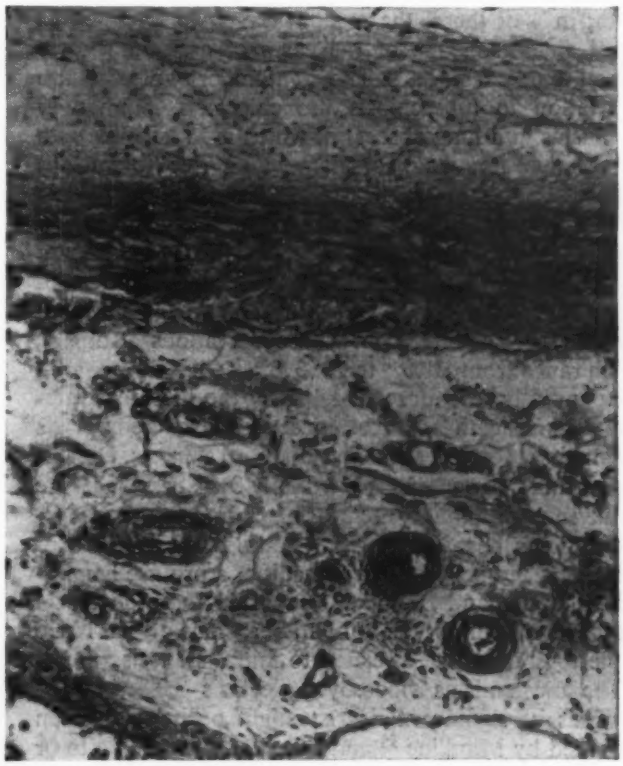


Fig. 4.—Section of the right lung, showing marked thickening of the intima of branches of the pulmonary artery, with lipoid-laden macrophages. The vasa vasorum and adventitia also show marked thickening (× 120).

The pertinent gross diagnoses were as follows: There were an old fibroplastic deformity, stenosis, and insufficiency of the mitral valve. The bronchi were obstructed by blood and blood clots. In both lower lobes and the middle lobe of the right lung there were hemorrhages and chronic passive congestion.

The pertinent microscopic diagnoses were as follows: There were myocardial fibrosis and edema. The mitral valve contained a healed fibroplastic deformity. There were chronic passive congestion in the lungs and marked intra-alveolar hemorrhages. There was moderate arteriosclerosis in the pulmonary arteries. No definite vascular dilatations were noted.

In the last 25 years, only one American report clearly relates sudden death to a brisk hemoptysis in a patient with mitral stenosis.[1a] However, hemoptysis in such patients has been noted occasionally.[1a, b, c] Somewhat more frequent reports of various complications and even death following and directly related to hemoptysis from any cause are to be found in both the American and foreign literatures.[2]

The usual reported complication of sizeable hemoptysis is pulmonary atelectasis of varying severity. Few such cases are secondary to mitral stenosis. In 1935, Mindline [2b] collected 43 cases of massive collapse of the

1*a*. Ginsberg, A. M.: Hemoptysis in Mitral Stenosis: With Report of 2 Cases, 1 with Fatal Hemorrhage, J. Missouri M. A. **27**: 205, 1930.

1*b*. Ferguson, F. C.; Kobilak, R. E., and Deitrick, J. E.: Varices of the Bronchial Veins as a Source of Hemoptysis in Mitral Stenosis, Am. Heart J. **28**: 445, 1944.

lung complicating hemoptysis and only one was attributed to mitral stenosis. There were no resultant deaths. His review does not include the case report of Ginsberg [1a] inasmuch as this was not reported as showing massive pulmonary atelectasis.

In reviewing 31 cases of posthemoptic complications reported since 1930, we have found 11 that resulted in death; in 4 of these, the complications were related to mitral stenosis. None of the cases of atelectasis were related to mitral stenosis. The great majority of cases are in relation to tuberculosis, bronchiectasis, pulmonary neoplasms and lung abscesses, which is in keeping with the relative frequency of hemoptysis due to various causes. In a study of 1,316 cases of chest disease, Abbott and Hopkins [3] found hemoptysis to complicate 53.6% of cases of carcinoma, 49% of abscess, 44% of pulmonary infarct, 43.5% each of cases of acute bronchitis and of bronchiectasis, and 17% of mitral stenosis. This last figure is in general agreement with observations of others, which range from 10% [1c] to 23%.[4]

Apparently, therefore, judging by the literature, atelectasis and death as direct consequence of hemoptysis are much less frequent in cases of mitral stenosis. Oppenheimer and Schwartz [5] reported only 3 cases with severe paroxysmal pulmonary hemorrhages in 1,000 consecutive patients hospitalized with mitral stenosis. Two of these died, but not as a direct result of a profuse hemoptysis. Jackson and Diamond [6] reported three deaths in 436 cases of hemoptysis of nontuberculous origin. None of the total cases were related to mitral stenosis.

The mechanisms whereby atelectasis following hemoptysis of significant degree might occur have been presented by Mindline [2b] and little has been added to or detracted from this discussion in the ensuing 15 years. Two explanations are given, both plausible and both seemingly contributing to the atelectasis. One, and obviously active in our case, is bronchial blockage by blood mass, generally clotted, and resultant distal absorption of air. The other, and more difficult of direct demonstration, holds that free blood in the bronchial tree acts as an irritant and reflexly causes active contraction of the smooth muscles of the bronchioles, especially of the respiratory bronchioles. As a result, the spastic bronchioles are ineffective in clearing themselves of blood, where present, and offer increased resistance to the free passage of air, whether blood is present in the passageway or not. Proponents of this reflex mechanism hold that the blood coagulates because of the stagnation and hence is a secondary consideration.

Their evidence is quite interesting to note. Jacobaeus and Westermark [7] reported four instances of collapse of lung tissue in reviewing 21 cases of hemoptysis drawn from their x-ray files. In each of the four, the basic pulmonary disease was of short duration. This was cited in support of the observation that most cases of pulmonary collapse are to be found in patients with early pulmonary lesions; in other words, where the smooth musculature of the bronchioles is not significantly damaged and hence is able to respond as described. Ancillary indirect evidence followed on their observations that collapse rarely follows iodized oil (lipiodol®) studies of diseased lungs, whereas control studies in eight healthy people resulted in rapid massive collapse in three. These episodes of collapse followed the iodized oil instillations within 10 to 15 minutes (hence, reflexly), whereas periods up to six hours must elapse following experimental obstruction of a bronchus by a balloon. Furthermore, reexpansion was noted to occur while iodized oil still remained in the bronchioles. This was interpreted as following upon the relaxation of the spasm with resultant resumption of easier air exchange, the oil acting only as an initial irritant but never as a mechanical block. The occurrence of bronchospasm and resultant atelectasis after iodized oil instillation has not been the experience at this hospital.

Blood may, of course, fill the alveolar spaces as well as the bronchioles, and depending on the source of bleeding, may infiltrate the interstitial tissues and so interfere with aeration. This has been noted by others and by us as part of the morbid process.

More has been written about the causes of hemoptysis in mitral stenosis. Earlier, the simple explanations ascribed to and described in texts were the diapedesis of red blood cells through essentially intact vasculature or the rupture of smaller vessels due to the extreme congestion and hypertension in the pulmonary vessels.[8]

On somewhat tenuous grounds, Proft [8b] separated hemoptysis into two groups. In one group, made up of patients with evidence of right heart failure, no bleeding points were found and the hemorrhages were considered to be the result of sudden dilatation of lung capillaries with diapedesis into the alveoli. In the other group, made up of patients with right heart failure, the bleeding was due to rupture of dilated capillaries lining the bronchioles. The reason for differentiation on the basis of peripheral congestion is not clear. Simple diapedesis does not seem likely as a cause of sizeable hemorrhage. Credence is given to the second of the above mechanisms by the report of Ferguson and co-worker,[1b] who injected bronchial veins with particles too large to pass through capillaries and demonstrated their appearance in the pulmonary veins in the lungs of both control and mitral stenosis patients. They concluded that, with increased pulmonary pressure, the gradient of blood flow is reversed through these bronchopulmonary venous connections, so that the submucosal bronchial veins dilate and are liable to rupture. In 6 of their 11 cases of mitral stenosis bronchial varicosities were easily demonstrable.

As early as 1878, Duroziez [9] incriminated pulmonary changes due to an acute attack of rheumatic fever as a cause for hemoptysis. Since then, refined studies by Masson,[10] Bouchut and associates,[11] Brenner,[12] and Pappenheimer and von Glahn [13] have demonstrated in-

8b. Proft, E.: Über die Quellen starker Lungenblutungen bei Stauungslungen, Ztschr. f. klin. Med. **119**: 218, 1931.

2b. Mindline, J.: Massive Collapse of the Lung Complicating Haemoptysis, Brit. M. J. **2**: 1201, 1935.

10. Masson, P.; Riopelle, J. L., and Martin, P.: Poumon rhumatismal, Ann. anat. path. **14**: 359, 1937.

11. Bouchut, L.; Froment, R.; Girard, M., and Masson, R.: Grandes hémoptysies apparues au cours de rhumatismes cardiaques évolutifs avec rétrécissement mitral: Rôle de l'inflammation pulmonaire rhumatismale, Lyon méd. **157**: 89, 1936.

12a. Brenner, O.: Pathology of the Vessels of the Pulmonary Circulation, Arch. Int. Med. **56**: 1189, 1935.

12b. Brenner, O.: Sclerosis of the Pulmonary Artery with Thrombosis, Lancet **1**: 911, 1931.

13. Pappenheimer, A. M., and von Glahn, W. C.: Lesions of the Aorta Associated with Acute Rheumatic Fever and with Chronic Cardiac Disease of Rheumatic Origin, J. M. Research **44**: 489, 1924. von Glahn, W. C., and Pappenheimer, A. M.: Specific Lesions of Peripheral Blood Vessels in Rheumatism, Am. J. Path. **2**: 235, 1926.

volvement of large, medium, and small arteries, capillaries, and veins by the rheumatic process. Definite necrotizing lesions occur in the smaller arteries and veins and in the capillaries, with consequent weakening of their walls so that their rupture is possible under the increased intrapulmonic vascular pressure present with mitral stenosis of significant degree.

The final explanation for some cases of hemoptysis, and possibly active in our case, concerns itself with arteriosclerotic changes in the pulmonary arteries with bleeding resulting from opened vasa vasorum or, more likely, from rupture of weakened walls. Without entering into the discussion of causes of arteriosclerosis, we wish to emphasize the relative frequency with which pulmonary arteriosclerosis is noted in any type of pulmonary hypertension, which is certainly present in higher grades of mitral stenosis.[14]

SUMMARY

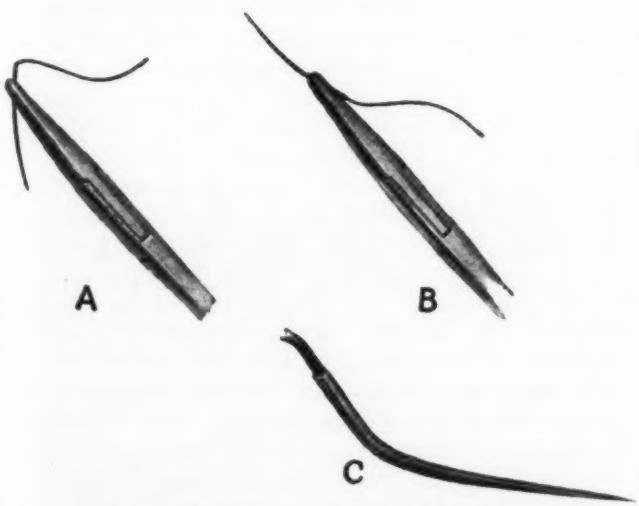
A case of mitral stenosis in which death was due to massive hemoptysis is described. The clotted blood produced bilateral obstruction of the bronchial tree and produced death by asphyxiation.

30 N. Michigan Ave. (Dr. Isaacs).

ANGLED NEEDLE FOR SUTURING AURICULAR APPENDAGE IN COMMISSUROTOMY

Gerald H. Pratt, M.D., New York

The development of instruments necessary to perform a new operative technique do not keep pace with the surgical advance. The tools are fashioned of necessity and at first are makeshift. The ingenious aortic clamp of Potts and the rib retractor of Sinochietto are examples. Operating in the thoracic cage requires variations from standard instruments and needles.



A, the needle held in reversed position at angle of 35 degrees. *B*, the needle holder applied at an angle of 165 degrees. *C*, the needle with its long square base.

In the operation of mitral commissurotomy, a now accepted surgical treatment, the purse-string suture and over-sewing of the auricular appendage are of primary importance. Accidents or technical errors at this point, such as the slipping of a clamp or the tearing of the suture, not only are hazardous but may be fatal.

The standard needle and needle holder are constructed so that the needle is grasped at right angles to its direction of insertion. Such clasping is adequate if the surgeon is able to lower his hand to a level parallel to the needle. To sew the appendage and to insert the needle each time at the same level requires either that the hand be in the chest or that the organ itself be elevated.

At autopsy it was noted that the appendage was sutured at an uneven depth on the two sides in most instances in which death followed mitral commissurotomy. Some of these sutures so placed pulled through, and at times the lacerations continued into the auricle. To counteract this tendency, most surgeons have tried to hold the needle at an oblique angle. This causes the needle to slip around in the grasp of the needle holder.

With the cooperation of an interested suture company, a needle has been made that has a correction for this technical defect. A ski type of needle (*C* in the figure), using atraumatic silk, was made with the base of the ski as a long square instead of a flat surface. This change permits the needle to be held securely at any angle from 0 to 180 degrees. The suture is prepared in boilable tubes in an oil base, the oil decreasing the trauma.

The use of such a needle for other deep suturing is also feasible. Other parts of the heart, the deep lying vessels in the chest or abdomen, the bronchi, the pelvic bowel, and bladder at times all present suture problems in which such a needle proves valuable. The diamond point and other type needle holders have not eliminated the need for such a suture addition.

30 E. 60th St.

The needle described was made with the cooperation of Davis and Geck Company, Brooklyn.

From the Vascular Clinic of St. Vincent's Hospital of the City of New York and the New York University College of Medicine.

Safeguard in Anticoagulant Therapy.—Vitamin K_1 is most effective in overcoming the prothrombin deficiency induced by such drugs as dicoumarol, tromexan, and phenylindandione. Even with very severe deficiencies, resulting in prothrombin levels of below 10% for several days, an oral dose of 500 mg. of vitamin K_1 will restore the prothrombin time to a safe level within eight hours, the effect being evident within four hours. . . . When very large doses of dicoumarol (and to a lesser extent phenylindandione) have been given, with the consequent storage of the drug in the body, repeated doses of vitamin K_1 may be needed to prevent a further rise in the prothrombin times—"rebound phenomenon." This effect does not occur with tromexan owing to the rapidity of excretion of the drug. . . . The availability of vitamin K_1 should widen the scope of anticoagulant therapy with dicoumarol and allied drugs, so long as it is remembered that prothrombin estimations are essential for their control. The possibility of an urgent operation being necessary in a patient on dicoumarol or allied drugs has always been a drawback to their use. This drawback is largely overcome by the use of vitamin K_1. In considering the use of such a potent drug as vitamin K_1, it must be remembered that the prompt restoration of the prothrombin to a normal, or near normal, level in a patient requiring the use of anticoagulants will inevitably restore the dangers of thrombo-embolism. Vitamin K_1 must therefore be used with caution and only in cases where the danger of severe prothrombin deficiency overrides that of thromboembolism.—M. Toohey, M.D., Antagonism of Anticoagulants Dicoumarol, Tromexan, and Phenylindandione by Vitamin K_1, *British Medical Journal*, Sept. 27, 1952.

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CORRECTION

Through an oversight in the Pressroom and in the Proofroom, advertising page 14, which contained "Washington News," in the Jan. 3 issue of The Journal was duplicated on reader page 14 of that issue and 24,000 copies had been mailed before the error was discovered. In order that the Jan. 3 issues be in order, the present Jan. 10 issue has, following the first editorial page, a two page reproduction of reader pages 13 and 14 of the Jan. 3 issue. It is suggested that subscribers who received the Jan. 3 Journal that contained the misplaced page make use of these two pages to complete their Journal. If any subscriber wishes a correct copy of the Jan. 3 issue, it may be obtained without charge by writing to the Editor. The Editor and all others at headquarters responsible to him are extremely sorry for the trouble this will cause those whose Journals had been mailed before the oversight was corrected.

CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Plans have been completed for the 49th Annual Congress on Medical Education and Licensure, which will be held at the Palmer House, Chicago, Feb. 8-10, 1953. The program for the meeting, which is sponsored by the Council on Medical Education and Hospitals, appears elsewhere in this issue.

One of the most important features of the program will be a panel discussion of the new curriculum initiated this year at Western Reserve University. Since the first announcement some three years ago that the faculty of this school was studying the possibility of reorganizing the curriculum to provide a fresh, new approach to medical education, medical educators have been eagerly awaiting a report of the study and the plans developed from it. A full report of the new program will be presented by a panel of faculty members from the university.

Important problems relating to residency training will be discussed on the first day of the Congress. This part of the program is sponsored by the Advisory Board for Medical Specialties. Those concerned with medical licensure will be interested in the special program on practice violations that the Federation of State Medical Boards has planned for the afternoon of the same day.

Other subjects relating to medical education to be discussed at the Congress will include experimentation in medical teaching, the use of private patients for teaching, a report of the Advisory Committee on Internships, and a panel discussion of the continuing impact of the national defense program on medical education. Licensure problems will receive further attention with reports on the use of objective and practical examinations by state medical boards.

The Congress is an open meeting at which physicians and others interested in medical education are welcome. A special block of rooms is being held at the Palmer House for those planning to attend. Reservations should be made directly with the hotel at the earliest possible date.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH

The Thirteenth Annual Congress on Industrial Health will take place Jan. 20-22, 1953, at the Drake Hotel in Chicago. The details of the program will be found in the Organization Section of this issue of THE JOURNAL. In accordance with past custom, collaboration has been sought from local agencies and others in the presentation of what are regarded as the principal current developments. A number of the sessions will emphasize the present interest taken by the American Medical Association in direct medical service plans. Recently the Committee on Medical Care for Industrial Workers has become a joint one between the Council on Medical Service and the Council on Industrial Health. In the course of time, full details will be secured by this committee respecting all forms of medical care made available through management-sponsored or union-sponsored plans, or combinations thereof. In the meantime this congress will reveal the challenge that these developments pose.

The health problems of the small plant and the ability of the general practitioner to extend the scope of his service in the community to encompass this kind of activity continue to be a matter of concern to industrial medical and health organizations. Assistance has been secured from the Chicago Association of Commerce and Industry and the Committee on Industrial Health of the Chicago Medical Society to determine whether a local community industrial health council might not have some merit as a focal point for study and development.

Panel discussions on the final day of the Congress represent the intention of the Council on Industrial Health to interest itself in two significant areas of activity. The program, in effect, launches the recently created Committee on Occupational Cancer, which will devote itself to a subject of increasing significance to a number of vital industries. The "Clinic on Human Relations" is a continuation of previous sessions of this type. Each succeeding session has demonstrated most conclusively that the effect of our industrial age on individual workers is likely to be more emotional than physical and that in time these effects will represent a greater and greater share of the physician's interest in industrial health.

The hotel has accommodations available for those who indicate they are attending the Congress.

METHONIUM-CONTROLLED HYPOTENSION IN SURGERY

Most surgical procedures in vascular areas are associated with a degree of bleeding that is likely to obscure the anatomy and pathological processes of the parts, to deplete the patient's reserves of blood, and to delay the surgeon. The satisfactory performance of many surgical operations depends on a moderately dry field. In certain operative interventions, such as the fenestration operation and certain plastic operations, bleeding of any severity may seriously interfere with the performance of the operation. Griffiths and Gillies in 1948,[1] pointed out that the only certain way to reduce bleeding is to lower the blood pressure and demonstrated that a considerable fall in blood pressure may be produced by a spinal block high enough to paralyze the thoracic sympathetic outflow, combined with administration of narcotics and postural control. These investigators found that a capillary circulation sufficient to maintain cellular respiration and cellular metabolism in all of the vital organs could be maintained when the systolic blood pressure was approximately 60 mm. Hg, provided the blood was sufficiently oxygenated and provided vasodilatation took place.

More recently, controlled hypotension in surgery has been achieved by autonomic ganglion blocking with pentamethonium and hexamethonium compounds. Enderby [2] reported in 1950 on the use of pentamethonium in 50 patients. He pointed out that to obtain a moderately bloodless field it is not sufficient to reduce the blood pressure; the patient must be so placed that the operative field is elevated and the blood can drain away from it. In a later article, reviewing 250 cases, Enderby and Pelmore [3] state they were able to obtain optimal hypotension in 85%. The advantages claimed for this method are: 1. Operations can be done more quickly and more easily, particularly when the site of operation is difficult to reach, as in intranasal, intraoral, antral, and deep cervical procedures. 2. Blood loss is reduced to a minimum in operations in which it is often severe, e. g., radical mastectomy and forehead-flap rhinoplasty. 3. Surgical complications, such as hematoma and postoperative edema, are reduced, which is of great advantage in skin grafting and the transfer of skin flaps and pedicles. 4. More extensive surgery is possible at one operation when bleeding is no longer a deciding factor, for example, in extensive skin grafts to face and neck. 5. The postoperative recovery of many patients seems to be considerably improved.

The initial dose of hexamethonium bromide, according to Enderby and Pelmore, varies with age and the preoperative blood pressure, the normal young adult receiving 50 mg. The effects of the drug and of the posture are assessed in three minutes. Patients over 40 years of age received 30 to 40 mg., and hypertensive patients, patients with arteriosclerosis, and those over 60 years of age are given an initial dose of 20 mg. Once ganglionic block has been obtained, further administration of the drug will not cause further reduction in blood pressure. Operations lasting up to 225 minutes have been successfully completed with no ill-effects from the low pressure; however, these authors do not recommend that these techniques be used for such lengthy periods in the present state of our knowledge.

McLaughlin and Watson [4] report on the use of the method in 34 plastic operations. There was a striking degree of ischemia in the operative field of 31 patients. A number of usually tedious procedures were completed in an encouragingly short time. Hughes [5] reported on 10 cases of fenestration operation in which the method was used with excellent results. Wilflingseder [6] was particularly enthusiastic about the method in plastic operations on the face and neck.

While these and other reports attest to the value of controlled hypotension in surgery, the hazards of the procedure have repeatedly been stressed. The technique demands the undivided attention of the anesthetist, who must take repeated blood pressure estimations and carefully watch the pulse and color, and the possibility that hypotension of shock may be masked by the induced hypotension must be kept in mind. Since uncontrollable hemorrhage may quickly produce severe hypotension owing to loss of normal vasomotor tone, adequate blood should be available for transfusion. Selection of patients must be carefully made, lest the hypotension lead to serious ischemia in the brain, kidney, or heart if circulation to these organs is already impaired. Finally, restoration of the pressure to normal should be a gradual process, in order to avoid reactive hemorrhage. Provided the limitations of controlled hypotension in surgery are kept in mind, further exploration of its possibilities appears warranted.

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2. Enderby, G. E. H.: Controlled Circulation with Hypotensive Drugs and Posture to Reduce Bleeding in Surgery: Preliminary Results with Pentamethonium Iodide, Lancet **1**: 1145-1147 (June 24) 1950.

3. Enderby, G. E. H., and Pelmore, J. F.: Controlled Hypotension and Postural Ischaemia to Reduce Bleeding in Surgery: Review of 250 Cases, Lancet **1**: 663-666 (March 24) 1951.

4. McLaughlin, C. R., and Watson, J.: Operative Aspects of Postural Ischaemia with Hexamethonium Bromide, Brit. J. Plast. Surg. **4**: 121-129 (July) 1951.

5. Hughes, G.: Use of Pentamethonium and Posture to Reduce Bleeding in Fenestration Operations, Lancet **1**: 666-667 (March 24) 1951.

6. Wilflingseder, P.: Die medikamentöse Blutdrucksenkung zur Verhütung der Operationsblutung, Deutsche med. Wchnschr. **77**: 619-622 (May 9) 1952.

ORGANIZATION SECTION

FORTY-NINTH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Palmer House, Chicago, Feb. 8, 9, and 10, 1953

SCHEDULE OF MEETINGS

SUNDAY, FEB. 8, 9:00 A. M.-12:30 P. M.

ROOM 14

Advisory Board for Medical Specialties

Open Meeting

SUNDAY, FEB. 8, 2:00 P. M.-5 P. M.

ROOM 17

Federation of State Medical Boards of the United States

Business Meeting

Special Program on Practice Violations

MONDAY, FEB. 9, 9:30 A. M.-5:00 P. M.

RED LACQUER ROOM

Council on Medical Education and Hospitals American Medical Association

Annual Congress on Medical Education and Licensure

MONDAY, FEB. 9, 5:00 P. M.-7:00 P. M.

ROOM 14

Reception for Registrants of the Congress by the American Medical Association

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MONDAY, FEB. 9, 7:00 P. M.

CRYSTAL ROOM

Annual Dinner, Federation of State Medical Boards of the United States

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TUESDAY, FEB. 10, 9:00 A. M.-12:30 P. M.

RED LACQUER ROOM

Federation of State Medical Boards of the United States

Annual Congress on Medical Education and Licensure

TUESDAY, FEB. 10, 12:30 P. M.-3:00 P. M.

CRYSTAL ROOM

FEDERATION LUNCHEON

Continuation of Business Meeting of Federation of State Medical Boards of the United States

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All meetings are open to physicians and others interested in medical education

Advisory Board for Medical Specialties

SUNDAY MORNING, FEB. 8, 9:00 A. M.

ROOM 14

ROBERT A. MOORE, M.D., *Presiding*

Admission of Graduates of Foreign Medical Schools to Residency Training and Certification: (a) Citizens of the United States and Canada; (b) Citizens of Other Countries.

R. J. WHITACRE, M.D., Vice-President, American Board of Anesthesiology

Discussion:

CREIGHTON BARKER, M.D., Federation of State Medical Boards of the United States

ERNEST L. STEBBINS, M.D., Secretary, American Board of Preventive Medicine

One and Two Year Residencies

FRANCIS J. GERTY, M.D., American Board of Psychiatry and Neurology

Discussion:

E. H. LEVEROOS, M.D., Associate Secretary, Council on Medical Education and Hospitals, American Medical Association

ROBIN C. BUERKI, M.D., American Hospital Association

Preceptorship Training in Lieu of Residency Training

WALTER L. PALMER, M.D., Chairman, American Board of Internal Medicine

Discussion:

WARREN H. COLE, M.D., Chairman, American Board of Surgery

HENRY C. PONCHER, M.D., Secretary-Treasurer, American Board of Pediatrics

General Discussion

The Federation of State Medical Boards of the United States

SUNDAY AFTERNOON, FEB. 8, 2:00 P. M.

ROOM 17

WALTER E. VEST, M.D., *Presiding*

Roll Call of Member Boards and Associate Members

Report of Secretary-Editor and Treasurer

WALTER L. BIERRING, M.D., Federation of State Medical Boards of the United States

Appointment of Committees:

Resolutions, Nominations, President's Address, Auditing, and Miscellaneous

SPECIAL PROGRAM ON PRACTICE VIOLATIONS

Grounds for Revocation and Enforcement Procedures

JOHN H. ANDERSON JR., Legal Counsel, North Carolina Board of Medical Examiners

Gathering of Evidence: Methods Employed; Organization of Facts; Board Hearings

JAMES D. PARRIOTT, Assistant Attorney General of Colorado

General Summary: Review of Procedures in Different States

J. W. HOLLOWAY JR., Director, and GEORGE E. HALL, Associate, Bureau of Legal Medicine and Legislation, American Medical Association

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Council on Medical Education and Hospitals
American Medical Association

MONDAY MORNING, FEB. 9, 9:30 A. M.

RED LACQUER ROOM

H. G. WEISKOTTEN, M.D., *Presiding*

Address of the Chairman: Experimentation in Medical Education

H. G. WEISKOTTEN, M.D., Chairman, Council on Medical Education and Hospitals, American Medical Association

Problems Facing Medical Education: Impressions Gained from the Testimony Presented to the President's Commission on the Health Needs of the Nation

JOSEPH C. HINSEY, PH.D., Member of the President's Commission and Dean, Cornell University Medical College

Private Patients in Medical Education

S. HOWARD ARMSTRONG JR., M.D., Professor of Medicine, University of Illinois College of Medicine

Panel Discussion: The Evolution of an Experimental Program of Medical Education at Western Reserve University

JOSEPH T. WEARN, M.D., Dean, Professor of Medicine and Director of the Department of Medicine, *Moderator*

The Background of the Experiment

JOHN L. CAUGHEY JR., M.D., Associate Dean and Associate Professor of Clinical Medicine

The Evolution of a Curriculum by Democratic Methods. Developments at Western Reserve University Since 1950

T. H. HAM, M.D., Professor of Medicine, and Chairman, Committee on Medical Education of the General Faculty

Phase 1. The Program for the First Year, 1952-1953

JOHN W. PATTERSON, M.D., Associate Professor of Anatomy and Coordinator of Phase 1

MONDAY AFTERNOON, FEB. 9, 2:15 P. M.

RED LACQUER ROOM

HARVEY B. STONE, M.D., *Presiding*

First World Conference on Medical Education, Aug. 22-29, 1953

LOUIS H. BAUER, M.D., Secretary-General, World Medical Association

Panel Discussion: The Internship in Modern Medical Education. Report of the Advisory Committee on Internships

VICTOR JOHNSON, M.D., Director, Mayo Foundation for Medical Education and Research, *Moderator*

S. HOWARD ARMSTRONG, JR., M.D., Professor of Medicine, University of Illinois College of Medicine

GRANVILLE A. BENNETT, M.D., Professor of Pathology, University of Illinois College of Medicine

U. R. BRYNER, M.D., President-Elect, American Academy of General Practice

JOHN C. LEONARD, M.D., Director of Medical Education, Hartford Hospital

EDWARD H. LEVEROOS, M.D., Associate Secretary, Council on Medical Education and Hospitals, American Medical Association

JOHN MCK. MITCHELL, M.D., Dean and Professor of Pediatrics, University of Pennsylvania School of Medicine

JOHN R. PAINE, M.D., Professor of Surgery, University of Buffalo School of Medicine

JOHN ROMANO, M.D., Professor of Psychiatry, University of Rochester School of Medicine and Dentistry

J. ROBERT WILLSON, M.D., Professor of Obstetrics and Gynecology, Temple University School of Medicine

JOHN B. YOUMANS, M.D., Dean and Professor of Medicine, Vanderbilt University School of Medicine

Panel Discussion: The Continuing Impact of the National Defense Program on Medical Education

DONALD G. ANDERSON, M.D., Secretary, Council on Medical Education and Hospitals, American Medical Association, and Secretary, Joint Committee on Medical Education in Time of National Emergency, *Moderator*

MAJOR GENERAL HARRY G. ARMSTONG, M.D., Surgeon General, United States Air Force

PAUL C. BARTON, M.D., Executive Secretary, National Advisory Committee on the Selection of Doctors, Dentists, and Allied Specialists, Selective Service System

REAR ADMIRAL C. J. BROWN, M.D., Deputy Surgeon General, United States Navy

HAROLD S. DIEHL, M.D., Dean, University of Minnesota Medical School

COLONEL RICHARD H. EANES, M.D., Chief Medical Officer, Selective Service System

COLONEL HAROLD C. GLATTLY, M.D., Office of the Surgeon General, United States Army

STOCKTON KIMBALL, M.D., Dean, University of Buffalo School of Medicine and Chairman, Joint Committee on Medical Education in Time of National Emergency

COLONEL WILLIAM W. ROE JR., M.D., Armed Forces Medical Policy Council

C. JOSEPH STETLER, Secretary, Council on National Emergency Medical Service, American Medical Association

HARVEY B. STONE, M.D., Member, Council on Medical Education and Hospitals, American Medical Association

National Fund for Medical Education

CHASE MELLEN JR., Executive Director, National Fund for Medical Education

American Medical Education Foundation

DONALD G. ANDERSON, M.D., Secretary-Treasurer, American Medical Education Foundation

MONDAY AFTERNOON, FEB. 9, 5:00 P. M.
ROOM 14

Reception for Registrants of the Congress by the American Medical Association

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The Federation of State Medical Boards of the United States

MONDAY EVENING, FEB. 9, 7:00 P. M.

CRYSTAL ROOM

FEDERATION DINNER

WALTER E. VEST, M.D., *Toastmaster*

Medical Licensure

LOUIS H. BAUER, M.D., President, American Medical Association

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The Federation of State Medical Boards of the United States

TUESDAY MORNING, FEB. 10, 9:00 A. M.

RED LACQUER ROOM

WALTER E. VEST, M.D., *Presiding*

The Osteopathic Problem

WALTER E. VEST, M.D., President, Federation of State Medical Boards of the United States

The Multiple Choice: Objective Examination

Experience with Two Hundred and Forty-Eight Applicants

F. T. D'HOUBLER, M.D., President, Missouri Board of Medical Examiners

Experience with Twenty-Eight Applicants

WILMOT C. FOSTER, M.D., Secretary, Oregon Board of Medical Examiners

Experience with Five Applicants

FRANKLIN D. YODER, M.D., Secretary, Wyoming Board of Medical Examiners

The Oral or Practical Examination: Experience with Large Numbers of Applicants

JOSIAH J. MOORE, M.D., Illinois Department of Registration and Education

Experience with Temporary or Special Licenses

S. M. POINDEXTER, M.D., Idaho State Board of Medicine

A New Medical Practice Act

BRUCE UNDERWOOD, M.D., Secretary, Kentucky State Board of Health

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TUESDAY, FEB. 10, 12:30 P. M.

FEDERATION LUNCHEON

WALTER E. VEST, M.D., *Presiding*

Medical Quacks in Chicago

NORMA LEE BROWNING, Chicago Tribune

GENERAL SESSION

Reports of Committees: Resolutions, Nominations, President's Address, Auditing, Miscellaneous

NEW BUSINESS

INSTALLATION, PRESIDENT-ELECT, JOHN N. McCANN, M.D.

THIRTEENTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

Drake Hotel, Chicago

Jan. 20-22, 1953

PRELIMINARY PROGRAM

Sponsored by
The Council on Industrial Health of the American Medical Association

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TUESDAY AFTERNOON, 1:00—FRENCH ROOM FOYER

REGISTRATION

INSPECTION OF EXHIBITS

TUESDAY AFTERNOON, 2:00—WALTON ROOM

JOINT CONFERENCE, COUNCIL ON INDUSTRIAL HEALTH AND REPRESENTATIVES OF STATE MEDICAL ASSOCIATIONS

GRADIE R. ROWNTREE, M.D., Chairman
MAX R. BURNELL, M.D., Vice Chairman

WEDNESDAY MORNING, 10:00—GRAND BALLROOM

Fear, Frustration, Futility: Industrial Aspects

RUTHERFORD T. JOHNSTONE, M.D., Los Angeles

HOW CAN WE BEST MAINTAIN THE HEALTH OF THE NATION'S WORK FORCE?—AS SEEN BY MANAGEMENT, LABOR AND MEDICINE

Sponsored by the Committee on Medical Care of Industrial Workers of the Council on Medical Service and the Council on Industrial Health

WILLIAM A. SAWYER, M.D., *Presiding*
Rochester, N. Y.

Participants:

Management: WILLIAM G. CAPLES, Summit, Ill., President, Inland Steel Container Company
Labor: To be announced
Medicine: EDWARD J. McCORMICK, M.D., Toledo, Ohio, President-Elect, American Medical Association

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WEDNESDAY AFTERNOON, 2:00—GRAND BALLROOM

Giving Birth to a Town

STANLEY H. COHLMEYER, Chicago, White Pine Copper Company

A COMMUNITY LOOKS AT INDUSTRIAL HEALTH

Arranged with assistance from the Chicago Association of Commerce and Industry and the Committee on Industrial Health of the Chicago Medical Society

Moderator: WILLIAM P. SHEPARD, M.D.
San Francisco

A number of cities have developed experience in promoting interest and support for improved industrial health and medical services with emphasis on the small plant. Representatives of interested groups in Chicago and elsewhere have been invited to discuss the usefulness of setting up a community industrial health council to serve as a focal point for study, development, and service. The results of this conference should have application anywhere.

The Problem

ANTHONY J. LANZA, M.D., New York, Director, Institute of Industrial Medicine, New York University-Bellevue Medical Center; Chairman, Council on Industrial Health

Mobilizing a Community's Resources for Industrial Health

Participants:

OTTO BETTAG, M.D., Chicago—Health Services
HERMAN N. BUNDESEN, M.D., Chicago—Public Health
G. MURRAY CAMPBELL, Chicago—Management
NICHOLAS DIPIETRO, Chicago—Labor
THEODORE VAN DELLEN, M.D., Chicago—Medicine

Consultants:

THOMAS D. DUBLIN, M.D., New York
SEWARD MILLER, M.D., Washington, D. C.
FREDERICK SLOBE, M.D., Chicago
JOHN K. WILLIAMS, Birmingham

Summarization by the Moderator

WEDNESDAY EVENING, 6:30—GOLD COAST ROOM

ANNUAL DINNER

Arranged Jointly with
The Chicago Medical Society

PRESIDENT'S AWARD—1952

An Award from the President of the United States to the Physician making the Outstanding Contribution to the Welfare and Employment of the Nation's Physically Handicapped Men and Women

VICE ADMIRAL ROSS T. MCINTIRE (MC), USN, Ret., Washington, D. C., *Presiding*

Chairman, President's Committee on Employment of the Physically Handicapped

The Challenge of Industrial Medical and Health Services to Our Voluntary System

Speakers to be announced.

THURSDAY MORNING, 9:30—GRAND BALLROOM

Some Perspectives in Medicine: Physician, Prevention and the People

JOSEPH L. LILIENTHAL JR., M.D., Baltimore, Professor of Environmental Medicine, Johns Hopkins School of Hygiene and Public Health

PANEL ON OCCUPATIONAL CANCER

Moderator: BRIG. GEN. JOHN A. ROGERS

Chicago

Occupational Cancer and the Industrial Environment

MAY R. MAYERS, M.D., New York, Chairman, Occupational Cancer Committee, Council on Industrial Health

An Epidemiological Approach to the Study of Occupational Cancer

MORTON LEVIN, M.D., Albany, N. Y., Assistant Commissioner for Medical Services, New York State Department of Health

Occupational Trauma and Cancer

GEORGE T. PACK, M.D., New York

Exposure to Radiation—A Growing Problem in Both Occupational and Community Environments

SAUL HARRIS, New York, Physicist, Division of Industrial Hygiene, New York State Department of Labor

Interest of the Council on Industrial Health Concerning Occupational Cancer

RAYMOND HUSSEY, M.D., Chicago, Scientific Director, Council on Industrial Health

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THURSDAY AFTERNOON, 2:00—GRAND BALLROOM

CLINIC ON HUMAN RELATIONS AND OCCUPATIONAL HEALTH

DALE C. CAMERON, M.D., General Chairman

Washington, D. C.

Introduction

DALE C. CAMERON, M.D.

General Procedure

RAYMOND HUSSEY, M.D., Chicago

Problem Demonstration

A clinical demonstration to illustrate human relations factors in dealing with occupational health situations in industry

Group Discussions of Problem Demonstration

The audience will be divided into sections under group leaders for discussion of assigned questions.

Distribution of Evaluation Sheets

Panel Discussion of Group Reports

WALTER D. WOODWARD, M.D., Medical Department, American Cyanamid Company, New York

Summary by the General Chairman

EVENING MEETING AT A. M. A. HEADQUARTERS

The Chicago Society of Physical Medicine and Rehabilitation will meet at 8 p. m., Jan. 28, in the auditorium of the American Medical Association Building, 535 N. Dearborn St., after dinner (5th floor) at 6:15 p. m. The following program will be presented: The Council on Physical Medicine and Rehabilitation, Ralph E. DeForest, Secretary, Council on Physical Medicine and Rehabilitation; Demonstration of Some Physical Principles Used in Medical Apparatus, Mr. Howard A. Carter, Director, Bio-Physical Investigation, Council on Physical Medicine and Rehabilitation; and The Physical Laboratory of the Council of Physical Medicine and Rehabilitation, Frederic T. Jung, Director, Physical Laboratory.

HOSPITALS GET A. M. A. PAMPHLET

The American Medical Association recently provided 47,000 copies of the PR pamphlet "Your Money's Worth in Health," to the Board of Hospitals and Homes of the Methodist Church. The Methodist Church has 193 hospitals and homes affiliated with this board.

IF YOU CHANGE YOUR ADDRESS

Your copy of THE JOURNAL is addressed to you several days in advance of the publication date; so if you change your address, please notify us at least three weeks in advance.

Send your old address together with the new, preferably clipping the name and address from your last copy of THE JOURNAL.

Copies mailed to your old address will not be forwarded by the Post Office, unless you provide the Post Office with the forwarding fee.

Send your change of address to:

American Medical Association
THE JOURNAL Subscription Department
535 N. Dearborn St., Chicago 10.

MEDICAL NEWS

CALIFORNIA

Courses in Prosthetics.—The University of California in Los Angeles announces a series of six week extension courses designed to train specialists in the latest techniques of equipping arm amputees. The first course will be initiated Jan. 12. A course has been set up for physicians, occupational and physical therapists, and prosthetists in each of the 10 Veterans Administration regions. As the course continues, representatives will come from the New York-Newark-Boston, the Dallas-San Antonio-New Orleans, and the Philadelphia-Pittsburgh-Washington, D. C., areas. Later sessions, starting Aug. 31, will bring representatives from the St. Louis-Kansas City-Cincinnati, Seattle-Portland-San Francisco, and the Louisville-Atlanta sections, with the concluding session, beginning May 31, 1954, for southern California and Hawaii representatives. Prosthetists will attend the entire six weeks of the course, occupational and physical therapists will participate in only the last three weeks, and physicians will attend only the final week.

COLORADO

Conference for General Practitioners.—Three clinic days, planned for practitioners in northeastern Colorado, will include (1) afternoon clinics (1-4:30 p. m.), (2) a dinner, and (3) an evening scientific program of broad general interest. The first of these programs, which are being sponsored jointly by the Morgan County Medical Society, the Colorado State Medical Society, and the University of Colorado School of Medicine, has been arranged for Jan. 23 at the Eben-Ezer Hospital in Brush. Dr. Samuel B. Potter, Pueblo, and Dr. Constantine F. Kemper, Denver, will discuss "Geriatric Problems." The second meeting, April 3, will be concerned with pediatric problems, and the third, June 19, with orthopedics and gynecology. All members of county medical societies may attend these meetings. Registration fee is $5. Expenses are being deferred in part by a W. K. Kellogg Foundation grant to the University of Colorado School of Medicine. For information write to the Office of Graduate and Postgraduate Education, University of Colorado Medical Center, 4200 E. Ninth Ave., Denver 20.

CONNECTICUT

Lectures on Monday Evenings.—The Hartford Medical Society announces the following series of lectures to be held on Mondays at 8:30 p. m. in the Hunt Memorial Building, Hartford, following a clinical conference held at one of the local hospitals at 5 p. m.:

Jan. 19, Practical Use of Antibiotics, Chester S. Keefer, Boston.
Feb. 2, Breast Tumors, Charles F. Geschickter, Washington, D. C.
Feb. 16, Low Back Pain, Joseph S. Barr, Boston.
March 2, Thromboembolic Disease, Jere W. Lord Jr., New York.
March 16, Practical Considerations of Fluid Therapy, Thaddeus S. Danowski, Pittsburgh.
April 6, Surgery for Peptic Ulcer, With or Without Vagotomy, John H. Garlock, New York.
April 20, Differential Diagnosis of Jaundice and Application of Liver Function Tests, Harold J. Jeghers, Washington, D. C.

ILLINOIS

Civil Defense Appointment.—Dr. Charles L. Maxwell has been appointed deputy director in charge of health services of the State of Illinois Civil Defense Agency, with headquarters at the Museum of Science and Industry, Chicago. Dr. Maxwell was formerly with the Indiana State Board of Health and more recently director, college health service, Eastern State College, Charleston.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Chicago

Neurological Society Meeting.—The Chicago Neurological Society will meet at 8 p. m., Jan. 13, in the International Relations Center, 13th floor, 116 S. Michigan Ave. The program includes the following reports:

Pick's Disease, Herman Josephy.
Nystagmus: A Clinical Classification and Motion Picture Demonstration, C. Wilbur Rucker, Rochester, Minn.
Effects of a Fibrosis-Inhibiting Substance on Innervation of Muscles by Nerve Implants, Hyman Hoffman, Melbourne, Australia, and William F. Windle, Ph.D., Evanston, Ill.

Radiation Physics.—The Graduate Division of Northwestern University Medical School offers a course in radiation physics, 7-9 p. m., Gilmer Hall, rm. 1276, Ward Memorial Building, 303 E. Chicago Ave. On Jan. 12 Robert Landauer, Ph.D., will present "Fundamentals of Electricity and Magnetism." On Jan. 15 he will discuss "Production of X-Rays" and on Jan. 26, "Interaction of X-Rays and Matter." For information communicate with Dr. Gordon W. Raleigh, rm. 492, Ward Memorial Building.

Emergency Service Placards.—Placards are now available for each physician on the Doctors Emergency Service list. The placard gives the physician traffic privileges in areas policed by the Chicago Police Department but not in zones policed by the Chicago Park District. Police traffic tickets received by physicians owning placards should be mailed immediately to the Chicago Medical Society, Committee on Night Calls, 86 E. Randolph St., where each case will be screened and recommendations made to the chief of police. Placards are not transferable and will be issued only to those having 1953 license numbers. Cards must be renewed annually.

IOWA

Dr. Ransom Honored.—A bronze plaque honoring Dr. Harry Ensign Ransom was recently presented to the City of Des Moines at a ceremony in City Hall. The plaque bears the following inscription: "The Polk County Medical Society with this testimonial plaque desires to honor Harry Ensign Ransom, M.D., in recognition of his thirty years of efficient effort in establishing a modern health service for the city of Des Moines and surrounding community during which time he served as assistant health officer, 1922-1932, commissioner of health, 1932-1951."

KENTUCKY

Proposed New Medical School in Lexington.—The Legislative Research Commission, an agency of the state government, has named the following members of the Kentucky State Medical Association to serve as an advisory committee to consider the proposal of establishing a medical school at the University of Kentucky in Lexington: Dr. R. Haynes Barr, Owensboro, president of the association; Dr. Clyde C. Sparks, Ashland, chairman of the council; Dr. Branham B. Baughman, Frankfort, member of the council and chairman of the legislative committee; Dr. J. Vernon Pace, Paducah, member of the council; and Dr. Edward H. Ray, Lexington.

Telephone Medical Seminars.—Four telephone medical seminars, sponsored by the Kentucky State Medical Association in cooperation with the University of Louisville School of Medicine, will be broadcast to subscribing component county medical societies the last Tuesday night during January, February, March, and April. Topics to be discussed are "Abdominal Emergencies," "Significance of Cough," "Office Proctology," and "Ophthalmology in General Practice." A manual will be sent to each member of the subscribing county societies 10 days before the broadcast, and each subscribing county will receive 10 lantern slides, keyed to the material presented, which will be shown in conjunction with the broadcasts.

MASSACHUSETTS

Symposium on Arthritis.—The New England Society of Physical Medicine, which will meet Jan. 21 at 8 p. m. at Massachusetts General Hospital, Boston, will present a symposium on arthritis with Drs. Hans Waine, Charles L. Short, and Arthur L. Watkins, all of Boston, as collaborators. Physicians, rehabilitation personnel, and students are invited.

Anesthesia Conferences.—On Jan. 16 the combined anesthesia teaching conferences will meet to discuss anesthesia for infants and children: special characteristics, premedication, choice of anesthesia, and complications. On Jan. 23 "Anesthesia for Patients with Cardiac Disease" will be the subject for discussion, which will include electrocardiograms, use of pharmacological agents in preparation for surgery, and anesthesia in emergency situations. On Jan 30 problems of anesthesia in surgery of the heart and great vessels will be considered, with special attention to pathological physiology, control of cardiac arrhythmias, and respiratory assistance. These meetings will be held in the Evans Memorial of the Massachusetts Memorial Hospitals, 750 Harrison Ave., Boston, 7-9 p. m. All physicians are invited.

MICHIGAN

Hospital Appoints New Chiefs.—Sinai Hospital, Detroit, announces the following appointments: Dr. George B. Eusterman, formerly professor of internal medicine at the Mayo Foundation, Rochester, Minn., has been named chief of medicine and director of medical education; Dr. Sidney D. Kobernick, formerly assistant professor of pathology at McGill University Faculty of Medicine, Montreal, Canada, has been made Sinai's director of laboratories; and Dr. Harry Z. Mellins, formerly assistant professor of radiology at the University of Minnesota, Minneapolis, will serve as director of radiology.

NEW JERSEY

Society News.—The New Jersey Gastroenterological Society will meet at 9 p. m. Jan. 12 at the Academy of Medicine, Lincoln Park, Newark. "Some Interesting Lesions of the Small Bowel" will be discussed by Dr. Isaac Gelber of Elizabeth, and "Pneumoperitoneum as a Diagnostic and Therapeutic Aid in Gastroenterology" by Dr. Hyman I. Goldstein, Camden.

Medicolegal Meeting.—The Morris County Medical Society and the Morris County Bar Association will hold a dinner meeting Jan. 15 at the Morris County Golf Club. Dr. Henry A. Davidson, formerly of Newark, and now living in Virginia, will speak on "How to Be Happy Though Cross-Examined." Dr. Davidson, who was for 10 years editor of the state medical journal, has recently written a book entitled "Forensic Psychiatry."

NEW YORK

Geriatrics Lecture.—The Medical Society of the State of New York, with the cooperation of the New York State Department of Health, will present a lecture on "Common Clinical Errors in the Care of Elderly Patients" by Dr. Frederic D. Zeman, New York, at the Belhurst in Geneva, Jan. 19 at 8:30 p. m.

Meeting on Cancer.—In celebration of its 20th anniversary the New York Institute of Clinical Oral Pathology will hold a meeting, open to the dental, medical, and allied professions, at the New York Academy of Medicine, 2 E. 103rd St., Jan. 12 at 8:30 p. m. Dr. Charles S. Cameron, New York, vice-president and medical and scientific director of the American Cancer Society, will discuss "Cancer: Retrospect and Prospect."

New York City

Harvey Lecture.—Dr. Josef Warkany, associate professor of pediatrics, University of Cincinnati College of Medicine, will deliver the fourth Harvey lecture of the current series at the New York Academy of Medicine, Jan. 22, on "Congenital Malformations Induced by Maternal Vitamin Deficiency: Experiments and Their Interpretation."

Lectures for General Practitioners.—The Department of Health of the City of New York has arranged for 18 lectures, to be given on Saturdays from 10:30 a. m. to noon, from Jan. 17 to May 16. Eight topics will deal with pregnancy, prematurity, and care of the newborn, five with neurological problems in general practice, and five sessions with chronic diseases of middle and later life. The following lectures will be presented in January:

Jan. 17, Trauma to the Central Nervous System, Joseph Ransohoff.
Jan. 24, Convulsive Disorders in Adults, Sidney Carter.
Jan. 31, Nutrition and Weight Gain in Pregnancy, Clair F. Folsome, Plainfield, N. J.

Meetings will be held in the second floor auditorium of the health department building at 125 Worth St.; no fee.

WISCONSIN

Dr. Evans Accepts University Appointment.—Dr. Alfred S. Evans, former chief of the hepatitis center and research laboratory, United States Army, Munich, Germany, has been appointed associate professor of preventive medicine and medical microbiology in the University of Wisconsin Medical School, Madison. Dr. Evans, who has served at Goldwater Memorial Hospital, New York, and as chief of medical service in Darnall General Hospital (now Kentucky State Hospital), Danville, became public health officer for the military government in Japan in 1945. Following his return to the United States he was assistant professor of preventive medicine at Yale University School of Medicine, New Haven, Conn.

GENERAL

Hospital News.—The Alumni Society of the Jewish Hospital of Brooklyn recently elected the following officers: Dr. Max Harten, president; Dr. I. Roy Gold, vice-president; Dr. Ralph M. Schwartz, secretary; and Dr. Nathan M. Fenichel, treasurer.

Millions for Cerebral Palsy.—Mr. Leonard H. Goldenson, president of United Cerebral Palsy (50 W. 57th St., New York 19), announces that that organization and its state and local affiliates raised a record total of more than 4 million dollars during the organization's third year of operations. This is almost 100% greater than the amount raised in the preceding year and exceeds by nearly 1 million dollars the contributions in its first two years.

Award for Essay on Sterility.—The American Society for the Study of Sterility announces its 1953 contest for the most outstanding contribution to the subject of infertility and sterility. The winner will receive a cash award of $1,000, and the essay will appear on the program of the 1953 meeting of the society. Essays must be received not later than March 1 and should be accompanied by a short biographical sketch of the author and a photograph. For information, address the American Society for the Study of Sterility, % Dr. Herbert H. Thomas, 920 S. 19th St., Birmingham, Ala.

Meeting of Otolaryngologists.—The Middle Section of the American Laryngological, Rhinological and Otological Society will begin its meeting at 9 a. m. Jan. 19 at the Drake Hotel, Chicago. The following papers will be presented:

Joint Role of the Otolaryngologist and Internist in the Removal of Focal Infection, Paul S. Rhoads, Chicago.
Indications for Adenoidectomy and Tonsillectomy in Children, G. O'Neil Proud, Kansas City, Kan.
Endotracheal Anesthesia in Children, John J. Hochfilzer and Ellis N. Cohen, St. Paul.
Hearing Impairments in Children, Charles E. Kinney, Cleveland.
Functions of the Septum and Its Relationship to Nasal Reconstructive Surgery, Russell I. Williams, Cheyenne, Wyo.
Cysts of the Ventricular Area of the Larynx, Herman I. Laff, Denver.
Spontaneous Cerebrospinal Rhinorrhea Secondary to the Malformation of Arnold-Chiari, Nelson A. Youngs, Grand Forks, N. D.

Surgeons Meet in Cincinnati.—The American College of Surgeons will hold a sectional meeting Jan. 19-21 at the Netherland Plaza Hotel in Cincinnati. On Monday afternoon there will be a panel discussion on "Recurrent Pancreatitis" with Dr. Vinton E. Siler, Cincinnati, as moderator. At the dinner Dr. Paul R. Hawley, Chicago, will speak on "Your College," and Dr. Stanley E. Dorst, Cincinnati, will present "Analysis of British Medicine, 1952." At 8:30 p. m. Dr. Danely P. Slaughter, Chicago, will preside at a symposium on cancer. Tuesday afternoon Dr. R. Arnold Griswold, Louisville, will serve as moderator for a panel discussion on "Tumors of the Neck," which will be followed by

a symposium on gynecology. Wednesday will be devoted to clinics in Cincinnati hospitals. The committee on trauma will hold its luncheon at 12 o'clock in parlor H. Nine motion pictures are scheduled for the scientific sessions.

Residencies in Experimental Medicine.—The Medical Division of the Oak Ridge Institute of Nuclear Studies will make two annual appointments for one year residencies in experimental medicine. Under contract with the Atomic Energy Commission, the division operates a 30 bed research hospital and laboratories. A research program of experimental cancer therapy with radioisotopes is in progress, and opportunities are offered for metabolic studies with isotopes and for investigations in hematology. The residencies are approved for one year of basic credit in internal medicine by the American Medical Association and the American Board of Internal Medicine. Stipends are $2,000 plus $4 a day subsistence in lieu of maintenance. Information may be obtained from Dr. Marshall H. Brucer, Chairman, Medical Division, Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tenn.

Society News.—The New England Obstetrical and Gynecological Society recently elected the following officers: president, Dr. Joel M. Melick, Worcester, Mass.; vice-president, Dr. Edward F. Shay, Fall River, Mass.; treasurer, Dr. Frederick L. Good, Boston; and secretary, Dr. Carmi R. Alden, 270 Commonwealth Ave., Boston.——At its annual meeting in Spokane, the North Pacific Surgical Association elected Dr. Thomas M. Jones, Victoria, British Columbia, Canada, president; Dr. Ralph H. Loe, Seattle, first vice-president; Dr. William K. Livingston, Portland, Ore., second vice-president; and Dr. John A. Duncan, Seattle, secretary-treasurer. The next annual meeting will be held Nov. 20-21 in Victoria.——At the annual meeting of the Western Surgical Association in Houston, the following officers were chosen: Dr. G. Lawrence Chaffin, Los Angeles, president; Dr. Michael E. DeBakey, Houston, Texas, first vice-president; Dr. Chester B. McVay, Yankton, S. D., second vice-president; Dr. Herbert H. Davis, Omaha, treasurer; Dr. Michael L. Mason, Chicago, secretary; and Dr. Everett P. Coleman, Canton, Ill., recorder.——At its winter meeting in New York, the American Psychoanalytic Association elected the following officers, each for a term of two years, to take office at the opening of the next annual business meeting of members, May 3: Dr. Ives Hendrick, Boston, president; Dr. Maxwell Gitelson, Chicago, president-elect; Dr. Richard L. Frank, New York, secretary; and Dr. Robert T. Morse, Washington, D. C., treasurer. The next meeting of the association will be held at the Hotel Statler, Los Angeles, April 30 to May 3.

DEATHS IN OTHER COUNTRIES

Dr. Theodor Hryntschak, director, urologic division, Viennese Municipal Polyclinic, professor of urology at the University of Vienna, and author, died in Vienna at the age of 63, June 28, 1952, of carcinoma of the stomach. After serving in World War I, he specialized in general surgery, then in urology. In 1936 he was secretary-general of the sixth meeting of the International Society of Urology, held in Vienna, and has been Austria's delegate to that body ever since.

CORRECTION

Through an oversight in the Pressroom and in the Proofroom, advertising page 14, which contained "Washington News," in the Jan. 3 issue of THE JOURNAL was duplicated on reader page 14 of that issue and 24,000 copies had been mailed before the error was discovered. In order that the Jan. 3 issue be in order, the present Jan. 10 issue has, following the first editorial page, a two page reproduction of reader pages 13 and 14 of the Jan. 3 issue. It is suggested that subscribers who received the Jan. 3 JOURNAL that contained the misplaced page make use of these two pages to complete their JOURNAL. If any subscriber wishes a correct copy of the Jan. 3 issue, it may be obtained without charge by writing to the Editor. The Editor and all others at headquarters responsible to him are extremely sorry for the trouble this will cause those whose JOURNALS had been mailed before the oversight was corrected.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* All centers where there are five or more candidates. Feb. 9-11, April 20-21 (Part II only), June 22-24 and Sept. 8-10 (Part I only). Candidates may file applications at any time, but the National Board must receive them at least six weeks before the date of the examination they wish to take. Final date for filing application for the February examination was December 29. Exec. Sec., Dr. John P. Hubbard, 133 South 36th St., Philadelphia 4.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations, July 17. Final date for filing applications is January 17. Sec., Dr. C. B Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various Centers, Sept. 3. *Oral.* Philadelphia, Oct. 16-18. Exec. Sec., Miss Janet Newkirk, 66 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Subspecialty Examination in Gastroenterology.* Philadelphia, April 10-11. Sec., American Board of Internal Medicine, Dr. W. A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June 1953. Final date for filing application for the oral examination is Jan. 15, 1953. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, Kingshighway and Euclid Ave., St. Louis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Various Centers, Feb. 6, 1953. Final date for filing applications was Nov. 1. *Oral and Pathological, Part II.* Chicago, May 17-24, Final date for filing application is Feb. 1. Sec., Dr. R. L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, January 1953. Final date for filing applications was July 1. *Practical.* New York City, June 6-10, 1953. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part II.* Chicago, Jan. 21-23. Sec., Dr. Harold A. Sofield, 122 South Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* New Orleans, April 21-25, 1953. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: *Written and Practical Examination in Pathologic Anatomy and Clinical Pathology.* The examination will include exfoliative cytology. St. Louis, March 28-31. Sec., Dr. Wm. B. Wartman, 303 E. Chicago Ave., Chicago.

AMERICAN BOARD OF PEDIATRICS: *Written.* Examinations under local monitors will be held on Jan. 16. This is the only written examination which will be given during 1953. *Oral.* Baltimore, Feb. 20-22; Memphis, March 27-29; Philadelphia, May 1-3; Detroit or Ann Arbor, June; Place undecided, Oct. 9-11 (tentative); Indianapolis, November. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION. *Oral and Written.* May 30-31. Final date for filing applications is March 31. Sec., Dr. Robert L. Bennett, 30 N. Michigan Blvd., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: Final date for receipt of case reports for the spring examination (May-June) is January 1 of each year. Final date for receipt of case reports for the fall examination (October-November) is June 1 of each year.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* For candidates in proctology and ano-rectal surgery. May 9, Kansas City, Minneapolis, Philadelphia and San Francisco. The examination will be in anatomy, physiology, biochemistry and pathology and will be both oral and written. Sec., Dr. Louis A. Buie, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, April 30-May 1. Sec.-Treas., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Tampa, April 8-15. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various Centers, March 1953. Final date for filing application was Dec. 1. Sec., Dr. John B. Flick, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Oral.* Chicago, Feb. 7-11. Sec., Dr. Harry Culver, 30 Westwood Road, Minneapolis 16, Minn.

BOARD OF THORACIC SURGERY: *Written.* Various Centers, Feb. 27. Final date for filing applications was Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Ave., Detroit 2.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1953 Annual Session, New York, June 1-5.

1953 Clinical Session, St. Louis, Dec. 1-4.

1954 Annual Session, San Francisco, June 21-25.

1954 Clinical Session, Miami, Florida, Nov. 30-Dec. 3.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH, Drake Hotel, Chicago, Jan. 20-22. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 9-10. Dr. Donald G. Anderson, 535 North Dearborn St., Chicago, Secretary.

NATIONAL CONFERENCE ON RURAL HEALTH, Roanoke Hotel, Roanoke, Va., Feb. 27-28. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

AMERICAN ACADEMY OF ALLERGY, Statler Hotel, Boston, Feb. 26-28. Dr. Ben Z. Rappaport, 55 East Washington St., Chicago, Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Drake Hotel, Chicago, Feb. 26-28. Prof. Ralph F. Turner, Michigan State College, Dept. of Police Administration, East Lansing, Mich., Secretary.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Palmer House, Chicago. Jan. 24-29. Dr. John R. Norcross, 122 South Michigan Avenue, Chicago 3, Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Palmer House, Chicago, Feb. 6. Mr. William C. Stronach, 20 North Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY:

MIDDLE SECTION, Drake Hotel, Chicago, Jan. 19. Dr. Ralph J. McQuiston, 20 North Meridian St., Indianapolis 4, Chairman.

SOUTHERN SECTION, Andrew Jackson Hotel, Nashville, Tenn., Jan. 12. Dr. Lester A. Brown, 490 Peachtree St., N.E., Atlanta 3, Ga., Chairman.

WESTERN SECTION, Elks Club, Los Angeles, Jan. 24. Dr. Howard P. House, 1136 West Sixth St., Los Angeles 14, Chairman.

AMERICAN ORTHOPSYCHIATRIC ASSOCIATION, Hotel Statler, Cleveland, Feb. 23-25. Dr. Exie E. Welsch, 303 Lexington Ave., New York 16, Secretary.

AMERICAN PROTESTANT HOSPITAL ASSOCIATION, Palmer House, Chicago, Feb. 10-13. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

CENTRAL SURGICAL ASSOCIATION, Drake Hotel, Chicago, March 5-7. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE, Palmer House, Chicago, March 3-6. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago 1, Secretary.

INTERNATIONAL POST-GRADUATE MEDICAL ASSEMBLY OF SOUTHWEST TEXAS, Municipal Auditorium, San Antonio, Texas, Jan. 27-29. Dr. John M. Smith Jr., P. O. Box 2445, San Antonio 6, Texas, Secretary.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY, Municipal Auditorium, New Orleans, March 2-5. Dr. Woodward D. Beacham, 1430 Tulane Avenue, New Orleans 12, Secretary.

NORTHWEST SOCIETY FOR CLINICAL RESEARCH, Seattle, Jan. 16-17. Dr. Arthur L. Rogers, 1216 S.W. Yamhill St., Portland 5, Ore., Secretary.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

EASTERN PENNSYLVANIA, Philadelphia, Jan. 16. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

COLORADO, Denver, February 17, Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

DELAWARE, Wilmington, Feb. 27. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

VIRGINIA, Norfolk, Feb. 26. Mr. E. R. Loveland, 4200 Pine St., Philadelphia, Executive Secretary.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:

CINCINNATI, The Netherland Plaza, Jan. 19-21. Dr. M. M. Zinninger, Cincinnati General Hospital, Cincinnati 29, Chairman.

ATLANTA, GA., The Atlanta Biltmore, Feb. 23-24. Dr. William G. Hamm, 384 Peachtree St. N.E., Atlanta, Chairman.

BOSTON, Statler Hotel, March 2-5. Dr. Samuel F. Marshall, 605 Commonwealth Ave., Boston, Chairman.

SOCIETY OF UNIVERSITY SURGEONS, Washington University, St. Louis, Feb. 12-14. Dr. Clarence Dennis, Kings County Hospital, Brooklyn, N. Y., Secretary.

U. S. CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS, SURGICAL DIVISION MEETINGS:

TRI-STATE ASSEMBLY OF TEXAS, Arkansas and Oklahoma, Adolphus Hotel, Dallas, Texas, Feb. 5-7. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Chairman.

PENNSYLVANIA AND SURROUNDING STATES, Bellevue-Stratford Hotel, Philadelphia, Feb. 13-14. Dr. Moses Behrend, 225 South 17th St., Philadelphia, Chairman.

WESTERN SOCIETY FOR CLINICAL RESEARCH, Carmel, Calif., Jan. 30-31. Dr. Herbert N. Hultgren, Stanford Hospital, San Francisco 15, Secretary.

INTERNATIONAL

CONGRESS OF INTERNATIONAL LEAGUE AGAINST RHEUMATISM, Geneva and Zurich, Switzerland, Aug. 24-29, 1953. For information write: Dr. W. Tegner, The London Hospital, London E.1, England.

CONGRESS OF THE INTERNATIONAL SOCIETY OF SURGERY, Lisbon, Portugal, Sept. 15-20, 1953. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

INTER-AMERICAN SESSION, AMERICAN College of Surgeons, Paulista Medical Association Bldg., Sao Paulo, Brazil, Feb. 9-12, 1953. Dr. Moacyr Eyck Alvaro, 1151 Conselacao, Sao Paulo, Brazil, Chairman.

INTERNATIONAL CONGRESS OF AUDIOLOGY, Groningen, Netherlands, June 5-6, 1953. Dr. Gunnar Holmgren, Strandvagen 5A, Stockholm, Sweden, President.

INTERNATIONAL CONGRESS OF ELECTROENCEPHALOGRAPHY AND CLINICAL NEUROPHYSIOLOGY, Boston, Mass., U. S. A., Aug. 18-21, 1953. Dr. Robert S. Schwab, Massachusetts General Hospital, Boston 14, Mass., U. S. A., Secretary-General.

INTERNATIONAL CONGRESS FOR HISTORY OF SCIENCE, Jerusalem, Israel, August 3-7, 1953. Prof. F. S. Bodenheimer, Hebrew University, Jerusalem, Israel, President.

INTERNATIONAL CONGRESS ON MEDICAL LIBRARIANSHIP, London, England, July 20-25, 1953. Mr. W. R. LeFanu, % London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1, England, Chairman.

INTERNATIONAL CONGRESS OF MICROBIOLOGY, Rome, Italy, Sept. 6-12, 1953. For information write: Dr. V. Puntoni, Citta Universitaria, Rome, Italy.

INTERNATIONAL CONGRESS OF OTORHINOLARYNGOLOGY, Amsterdam, Netherlands, June 8-15, 1953. Dr. W. H. Struben, J. J. Viottastraat 1, Amsterdam, Netherlands, Secretary.

INTERNATIONAL CONGRESS OF PAEDIATRICS, Havana, Cuba, Oct. 12-17, 1953. Prof. Felix Hurtado, 5a Avenue 124, Miramar, Havana, Cuba, President.

INTERNATIONAL CONGRESS OF RADIO-BIOLOGY, Copenhagen, Denmark, July 14-25, 1953. Prof. Flemming Norgaard, Oster Voldgade 10, Copenhagen K, Denmark, Secretary General.

INTERNATIONAL CONGRESS OF RADIOLOGY, Copenhagen, Denmark, July 19-25, 1953. Professor Flemming Norgaard, 10 Oster Voldgade, Copenhagen K., Denmark, Secretary General.

INTERNATIONAL CONGRESS OF THALASSOTHERAPY, Dubrovnick, Yugoslavia, May 17-25, 1953. Prof. C. Plavaic, Mavrodne Republick 51. Belgrade, Yugoslavia, Secretary General.

INTERNATIONAL CONGRESSES OF TROPICAL MEDICINE AND MALARIA, Istanbul, Turkey, Aug. 28-Sept. 4, 1953. Professor Dr. Ihsan Sükrü Aksel, Tunel Meydam, Beyoglu, Istanbul, Turkey, General Secretary.

INTERNATIONAL FERTILITY ASSOCIATION, New York, N. Y., U. S. A., May 25-31, 1953. Dr. Abner I. Weisman, 1160 Fifth Avenue, New York 29, N. Y., U. S. A., Associate Secretary General.

INTERNATIONAL HOSPITAL CONGRESS, London, England, May 25-30, 1953. Capt. J. E. Stone, 10 Old Jewry, London, EC2, England, Hon. Secretary.

INTERNATIONAL LEPROSY CONGRESS, Madrid, Spain, Oct. 3-10, 1953. Dr. Felix Contreras, Moreto 15, Madrid, Spain, Secretary.

INTERNATIONAL PHYSIOLOGICAL CONGRESS, Montreal, Canada, Aug. 31-Sept. 4, 1953. Dr. A. S. V. Burgen, Dept. of Physiology, McGill University, Montreal, Canada, Secretary.

INTERNATIONAL PSYCHO-ANALYTICAL CONGRESS, Bedford College, Regent's Park, London N.W.1, England, July 26-30. Dr. Ruth S. Eissler, 285 Central Park West, New York 24, N. Y., Hon. Secretary.

INTERNATIONAL VETERINARY CONGRESS, Stockholm, Sweden, Aug. 9-15, 1953. Prof. Axel Isaksson, Institute of Veterinary Medicine, Stockholm 50, Sweden, Secretary.

PAN AMERICAN CONGRESS OF THE MEDICAL PRESS, Buenos Aires, Argentine, July 12-16, 1953. Secretaria del Congress, 763 Uriburu, Buenos Aires, Argentine.

PAN AMERICAN MEDICAL ASSOCIATION, International Medical Cruise Congress, S. S. Nieuw Amsterdam, Jan. 7-19. Executive Offices, 745 Fifth Ave., New York 22, N. Y.

WORLD CONFERENCE ON MEDICAL EDUCATION, British Medical Association House, Tavistock Square, W.C.1, London, England, Aug. 24-29, 1953. Secretariat: World Medical Association, 2 East 103d St., New York 29, N. Y., U. S. A.

WORLD CONGRESS OF THE WORLD CONFEDERATION FOR PHYSICAL THERAPY, London, England, Sept. 7-12, 1953. Miss M. J. Neilson, Chartered Society of Physiotherapy, Tavistock House, South, Tavistock Square, London, W.C 1, England, Secretary

WORLD MEDICAL ASSOCIATION, The Hague, Amsterdam, Holland, Aug. 31-Sept. 7, 1953. Dr. Louis H. Bauer, 2 East 103d St., New York 29, N. Y., Secretary-General.

DEATHS

Moore, John Walker ⊕ Louisville, Ky.; born in McConnellsville, S. C., Jan. 29, 1884; University of Pennsylvania School of Medicine, Philadelphia, 1912; from 1915 to 1917 instructor in pathology and bacteriology at the University of Louisville School of Medicine, where he became successively professor of research medicine, professor and chairman of the department of medicine, dean, and Alben W. Barkley professor of medicine; past president and vice-president of the Association of American Medical Colleges; past president of the Central Society for Clinical Research; fellow of the American College of Physicians; and member of the Association of American Physicians; in 1949 received the distinguished service award of the Kentucky State Medical Association; member of Phi Beta Kappa, Phi Chi, Kappa Sigma, and Alpha Omega Alpha fraternities; served as a captain and later as a major in the medical corps of the U. S. Army during World War I and was a laboratory officer to the hospital center at Nantes, France; since 1942 technical supervisor of the American Red Cross Blood Donor Service; consultant for the Army Specialized Training Program; since 1923 director of the division of medicine and staff executive, Louisville General Hospital; specialist certified by the American Board of Internal Medicine; in 1936 received the award of merit of the University of Louisville School of Medicine; received the honorary degree of doctor of science from Davidson College, Davidson, N. C., in 1940; died in the Pewee Valley (Ky.) Sanitarium and Hospital Nov. 10, aged 68, of hypertension and arteriosclerosis.

Globus, Joseph Haim ⊕ New York City; born in Russia Nov. 25, 1885; Cornell University Medical College, New York, 1917; served as assistant clinical professor of neurology at Columbia University College of Physicians and Surgeons and as associate professor of neuroanatomy and neuropathology at New York University, University and Bellevue Hospital Medical College; specialist certified by the American Board of Psychiatry and Neurology; member and past president of the American Association of Neuropathologists and the New York Neurological Society; member of the American Neurological Association, Association for Research in Nervous and Mental Diseases, and the American Association of Anatomists; fellow of the New York Academy of Medicine; consulting neurologist and neuropathologist at Mount Sinai Hospital; consulting neurologist, Brunswick Hospital, Amityville, N. Y., John T. Mather Memorial Hospital, Port Jefferson, N. Y., Letchworth Village, Thiells, N. Y., Southside Hospital, Bay Shore, N. Y., and St. Joseph Hospital, Stamford, Conn.; recipient of the Lucien Howe medal in ophthalmology of the University of Buffalo for his work on the diagnostic value of visual field defects and other ocular disturbances in supratentorial brain tumors; founder and editor-in-chief of the *Journal of the Mount Sinai Hospital;* founder and executive editor of the *Journal of Neuropathology and Experimental Neurology;* author of "Neuroanatomy" and "Practical Neuroanatomy"; died Nov. 19, aged 66, of coronary thrombosis.

Nilsson, John Rudolph ⊕ Omaha; Omaha Medical College, 1901; emeritus professor of industrial surgery at his alma mater, now known as the University of Nebraska College of Medicine; member of the American Association for the Surgery of Trauma; formerly on the executive board of the American Association of Railway Surgeons; fellow of the American College of Surgeons; served during World War I; affiliated with Immanuel Deaconess Institute, University of Nebraska, and Nebraska Methodist hospitals; for many years chief surgeon of the Union Pacific Railroad; died Dec. 4, aged 74, of coronary heart disease.

Miloslavich, Edward Lucas ⊕ St. Louis; born in Oakland, Calif., in 1884; Medizinische Fakultät der Universität, Vienna, Austria, 1908; specialist certified by the American Board of Pathology; member of the American Academy of General Practice; fellow of the American Society of Clinical Pathologists, American Association for the Advancement of Science, and the American Public Health Association; formerly professor of pathology and bacteriology, Marquette University School of Medicine, Milwaukee, professor of legal medicine and criminology, University of Zagreb, Jugoslavia, and honorary professor, pastoral medicine, Theologic Faculty, University of Zagreb; served on the staffs of St. Mary's, St. Joseph, and Evangelical Deaconess hospitals in Milwaukee; affiliated with De Paul Hospital, where he died Nov. 11, aged 67.

Gilmore, Goodlatte Browne ⊕ New York City; born in Washington, D. C., Sept. 3, 1893; University of Virginia Department of Medicine, Charlottesville, 1917; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otological Society; fellow of the American College of Surgeons; for many years secretary of the Bronx County Medical Society; served during World War I; affiliated with Bronx Eye and Ear Infirmary, St. Barnabas Hospital for Chronic Diseases, and Morrisania and Seton hospitals, and a consultant at Union Hospital; died Nov. 19, aged 59, of coronary thrombosis.

Pollak, Maxim ⊕ Memphis, Tenn.; Magyar Kiralyi Pazmany Petrus Tudomanyegyetem Orvosi Fakultasa, Budapest, Hungary, 1914; member of the Illinois State Medical Society, American Trudeau Society, and the American College of Hospital Administrators; fellow of the American College of Physicians; formerly section chief at the Veterans Administration Hospital in Downey, Ill., medical director and superintendent of the Peoria (Ill.) Municipal Tuberculosis Sanatorium, and medical director of the Jewish Consumptive Relief Association Sanatorium in Duarte, Calif.; died Nov. 20, aged 61, of acute myocardial infarction.

Fisher, Herbert Henry ⊕ Columbus, Ohio; Starling Medical College, Columbus, 1898; served during World War I; died Oct. 26, aged 74.

Ford, Justina L. ⊕ Denver; Hering Medical College, Chicago, 1899; died Oct. 14, aged 81, of nephrosclerosis and hypertension.

Getty, Samuel Emmet ⊕ New York City; University of the City of New York Medical Department, New York, 1893; fellow of the American College of Surgeons; served overseas during World War I; honorary member of the board of trustees of St. John's Riverside Hospital, where he was surgeon emeritus, and where he died Nov. 13, aged 86.

Girton, Fred Warren, Detroit; University of Pennsylvania School of Medicine, Philadelphia, 1949; resident, Harper Hospital; died Nov. 16, aged 31.

Goewey, Raymond Ernest ⊕ Berea, Ohio; Syracuse University College of Medicine, 1924; on the staff of the Berea Community Hospital; died in Cleveland Clinic Nov. 8, aged 55, of acute bacterial endocarditis.

Goldstein, Sol Roland ⊕ Rochester, N. Y.; Cornell University Medical College, New York, 1930; affiliated with Rochester General Hospital; died Nov. 20, aged 47, of brain tumor.

Grinnan, St. George T. ⊕ Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1901; emeritus professor of pediatrics at the Medical College of Virginia; member of the Richmond Academy of Medicine; for many years affiliated with Crippled Children's Hospital; died in the Medical College of Virginia Hospital Division Nov. 10, aged 82, of multiple injuries received when struck by a truck.

Gulick, Clyde Denny, Urbana, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; served during World War I; died in Burnham City Hospital in Champaign Nov. 11, aged 75.

⊕ Indicates Member of the American Medical Association.

FOREIGN LETTERS

BRAZIL

Diagnosis of Neurosurgical Diseases.—At a recent meeting of the Brazilian College of Surgeons (São Paulo chapter), Prof. Carlos Gama presented a paper on diagnosis of cerebral diseases. Analyzing ventriculography, he explained the origin of the method, referring to Walter Dandy, inventor of the process and Manoel Balado, who proposed the use of heavy oil contrasts for visualization of the median ventricles and intermediary canals. With clear and convincing diagrams, he showed the mechanism of ventricular modifications due to blocks.

By showing a series of ventriculograms, Professor Gama proved the possibilities and safety of the method for locating cerebral tumors. He emphasized the convenience of using gas as a contrast medium for the visualization of the lateral ventricles and iodized oil, such as lipiodol,® for the median ventricle. He mentioned the possibilities of using cinematography for documentation of the ventricular modifications. He then pointed out advantages of the reading and interpretation of ventriculograms by means of diagrams such as the Tordildsen and Penfield diagrams.

Passing to the second means of neurosurgical diagnosis, Professor Gama analyzed the cerebral arteriograms suggested by Egas Moniz, which were developed by the Portuguese school. He commented on the contrast mediums used and analyzed the use of roentgen equipment. He reported that the use of specialized x-ray equipment is most convenient for preventing pain for the patient and is indispensable to obtain a cinematographic series of arteriograms.

He showed many series of arteriograms: about six anteroposterior and profile views obtained with only one injection of contrast medium, in the Schoenamder apparatus, with two tubes of 500 ma. each, and a series of five exposures obtained with a simple Westinghouse apparatus developed by Paulo de Almeida Toledo. With this series of arteriograms, Professor Gama demonstrated clearly the arterial, capillary, and venous times of the passage of the contrast medium injected into the arteries of the head. He also explained that there are elements not yet sufficiently analyzed and known to complete the story for this useful technique for neurosurgical diagnosis. The series of arteriograms included studies of the carotid system and of the vertebral system, which also was demonstrated with amazing clarity.

Passing to a discussion of electroencephalography, Professor Gama mentioned the first physicians to apply the study of human cerebral electric currents to clinical diagnosis: Lenox, Gibbs and Gibbs, Balado, and Penfield. He also referred to studies in Brazil, where there already is much interest in electroencephalography. However, through documented clinical cases Professor Gama demonstrated that the process cannot be used exclusively for the neurosurgical diagnosis of disease under the conditions presently employed here. He expressed hope that he will be able to publish more successful results later with electroencephalography as a means of neurosurgical diagnosis.

BCG Vaccination.—Vaccinations were performed according to a scheme first employed by Dr. Arlindo de Assis, who administered orally 100 mg. of BCG vaccine and repeated this up to a total dosage of 600 mg. to persons who were continuously exposed to infection by Koch's bacillus. During the period from January to December, 1951, Drs. Nogueira Martins and Pedral Sampaio, in São Paulo, vaccinated 556 persons against tuberculosis, of whom 400 (71.9%) were given the dose of 600 mg.

In general, the vaccine administered in this way was well tolerated, although 41 children (18.0%) vomited after the administration of the vaccine. Vomiting occurred more frequently after the second and succeeding doses had been administered. Drs. Nogueira Martins and Pedral Sampaio have administered vitamin C, orally, in a dose of 500 mg. to avoid this effect. Radiologically only two children showed changes in the lung. In one child, however, the radiological changes lasted almost three months, during which time the child had whooping cough. The authors have the impression that in both cases the changes were nonspecific.

There were eight deaths among the children under observation, due to various causes. In one case only does the record state "gangliopulmonary tuberculosis" as the cause of death, but the authors think that the statement cannot be confirmed, first because the radiological findings were normal one month before death occurred and, second, because of absence of other proof.

On the basis of their experience, Drs. Nogueira Martins and Pedral Sampaio reaffirmed, at the 12th Conference of the International Union Against Tuberculosis in Rio de Janeiro, their favorable impression regarding the efficacy of this vaccination method. As further support, they referred to the absence of death due to tuberculosis and to the status of the vaccinated children, who were continuously exposed to infection.

ITALY

Symposium on Cor Pulmonale.—The paper "Clinical Use of Extracorporeal Oxygenation with Oxygenator-Pump" by Helmsworth and co-workers (*J. A. M. A.* **150:**451 [Oct. 4] 1952) aroused the attention of the Italian scientific world because it indirectly confirms Condorelli's points of view on the mechanism of death in patients with cor pulmonale. Professor Condorelli, who holds the chair of medical pathology at the University of Rome, confirmed his concepts some days ago at an important symposium in the city of Benevento (Sannio), which is situated in a region where the greatest medical authorities of Southern Italy were born. At this meeting Professor Paolucci, director, surgical clinic, University of Rome, and Professor Ruggieri, director, Institute of Surgical Pathology, University of Naples, discussed the surgical techniques they use in cancer and bronchiectasis of the lung.

For many years Condorelli and co-workers have been studying the physiopathology of the pulmonary circulation. During numerous experiments at the universities of Catania and Rome he proved with special instruments that the pulmonary and systemic circulations obey some autonomous orders of pressure. There may be hypertension of the systemic circulation where there is no hypertension of the pulmonary circulation, and drugs such as amyl nitrite that help patients with hypertension of the systemic circulation do not help patients with hypertension of the pulmonary circulation. Nicotinic acid, which lowers, even though slightly and temporarily, the pressure of the systemic circulation, raises the pressure of the pulmonary circulation (*J. A. M. A.* **149:**1485 [Aug. 16] 1952).

It is well known that the difficulty in breathing of patients with cor pulmonale is caused by hypertension in the pulmonary artery, which most texts say is due to a "resistance" of the lung, i. e., to a mechanical factor that acts as an obstacle. Because of bronchial diseases, the lung undergoes fibrotic processes, which reduce the size of the elastic membrane of the lung that oxygenates the blood. When the lung has become fibrotic, it opposes the flow of the venous blood of the pulmonary artery and makes this artery become hypertensive; however, according to Condorelli, the hypertension of the pulmonary artery is not due to a phenomenon of mechanical resistance but to a biological phenomenon much more complicated. When the area of the lung in which the blood becomes oxygenated is diminished, there is in the blood a greater quantity of carbon dioxide. When this reaches a certain level the encephalic centers are disturbed and they excite the pulmonary artery to force its pressure and push the blood to circulate into the lung.

In the famous case reported by Ayerza in 1902, a patient with pulmonary emphysema who was "all black" and had no breathing difficulty but a pronounced drowsiness was able to lie in

The items in these letters are contributed by regular correspondents in the various foreign countries.

bed without pillows and without respiratory difficulty. Escudero Avillare, a pupil of Ayerza, made further studies on Ayerza's disease and found that the signs of black color, drowsiness, and respiratory hypotony were due to a fibrous disease of the lung that also had fibrotic effects on the pulmonary artery. He was referring to syphilis. Condorelli, who has made various autopsies, has proved that sudden death with apoplectic rhythm, black color, drowsiness, and psychic disturbances occurs because at a certain moment, because of an effort, or thrombosis, or embolism, the myocardial tonus is diminished. As soon as this happens, the hypertension of the pulmonary artery falls rapidly. In dropping it causes asphyxia against which it fought with a biological but not a mechanical mechanism. In other words, the hypertension of the pulmonary artery in patients with cor pulmonale is a defense and not a passive condition due to an obstacle.

The case reported on in the paper mentioned in THE JOURNAL of Oct. 4 confirms this point of view. As soon as the patient who had cor pulmonale was freed from carbon dioxide with the oxygenator-pump the difficult breathing that was caused by the increased work of the right heart—cor pulmonale—ceased. But when the extracorporeal circulation was interrupted, the difficult breathing reappeared and the patient had a relapse with cyanosis and the other signs when an embolism occurred, i. e., a trauma of the heart that impaired the efficiency of the myocardium and lowered the hypertension of the pulmonary artery. The practical consequences of Condorelli's standpoint are important. The first aid remedy in the acute phase of cor pulmonale (cyanosis, drowsiness, and obnubilation of the sensorium) is nicotinic acid. This drug excites the falling pressure of the pulmonary artery and at the same time compels the blood to circulate better in the vascular bed of the fibrous lung. Only after injections of nicotinic acid will the common cardiokinetics, oxygen, and all the other measures of help be useful. They were useless until recently because nicotinic acid was not used.

LONDON

The Aged Sick in London.—A revealing study has been carried out by A. N. Exton-Smith on a series of old persons in one of the London boroughs, who required admission to hospital on account of illness. The facts show the present trends and requirements among this section of the population. The proportion of old persons under the age of 80 requiring medical care is roughly equal in the two sexes. After the age of 80, the proportion of men receiving such care in relation to those not receiving it falls abruptly, while with women the reverse occurs. Sheldon suggests that "at advanced ages men are just merely holding on to life—they are by then very well or very ill—whereas women possess a hold on life which allows them to go on living even though they are in chronic ill-health."

The Rowntree report (1947 [*a*]) states: "In London, as might be expected, old people are housed somewhat differently from those living in provincial cities. Compared with those in other towns, many more of Londons old people live in tenements, flats and single rooms; and relatively fewer live in individual houses." The percentages are as follows: tenements 74%, flats 18%, houses 5%, and hostels or almshouses 3%. The tenements are converted old-fashioned houses. Many of these are unsuitable for old persons, not only on account of their lack of amenities but also because of the number of stairs. The floor level of the patients who lived in either flats or tenements was: basement 7%, ground 22%, first 29%, second 19%, third 19%, and fourth or higher 4%. It will be seen that less than one-quarter of the patients lived in rooms at the street level. Difficulty in managing stairs was common, which accounts for the high proportion of aged patients confined to houses or rooms. The stairs not only hindered many patients from getting out but also complicated life within. Often the bathroom and lavatory, frequently shared by other tenants, were one or more flights of stairs away. In the tenements, no fewer than 59% were unable to reach the water closet because of its inaccessibility. It was often situated in the yard outside, or in the basement; for this reason commodes or pails were used in the patient's room. In these respects 18% of patients living in flats were fortunate in that the water closet, bathroom, kitchen, and water supply were closer at hand and on the same level as the bedroom.

Of the married male patients 68% lived with their wife only, there being no other relative in the house; for female patients the proportion was higher—74%. The figures for the general population were 45% for men and 19% for women. In the present survey the high proportion of married women living with their husbands only is remarkable. The most likely explanation is that when the wife in an aged couple falls ill she is likely to require admission to hospital because of the difficulties arising when the domestic and nursing care depends entirely on the husband. In the case of widowed patients living with relatives, the daughter, often with domestic responsibilities of her own, was found to carry the heaviest burden. A high proportion of the patients lived alone—27.5% men and 56% women. The general practitioner attached much importance to this when referring the patient to a hospital.The principal cause of admission was the fact that the patient was living in squalor and suffering from malnutrition and neglect. The majority lived in single rooms in tenement houses, and other tenants knew so little about these patients that it was often difficult to determine how long they had been ill. Some had no relatives; others had no regular contact with them. Many were dependent on the help of neighbors and friends during illness. The neighbors were usually other tenants in the same house, and they helped the patient oftener than did the friends.

Many were unable to say how long their symptoms had lasted, and some of the bedridden patients had, of course, been confined to their rooms for a time before they had taken to their beds. The tenacity with which old persons cling to familiar surroundings, in spite of severe disabilities, and their reluctance to enter a hospital is remarkable. In several cases, the burden of nursing was severe and had fallen on one person for many years. Mental confusion added to the difficulties in nursing the old at home. With the help of professional nurses it was possible, in some, to tide the patient over a short illness and thus obviate admission to hospital. It has been shown that the increased demand for district nurses in the past few years is largely due to the greater numbers of aged and chronic sick being nursed at home because of the shortage of hospital beds.

Of those patients who lived alone, persons living in the same tenement had requested their removal to a hospital on the grounds that their presence was insanitary and a nuisance to the rest of the household. In all cases the living conditions were squalid, the rooms were filthy, the furniture dilapidated, and the smell almost unbearable. The neglect in which these persons were found was sometimes attributable to their physical state; for example, locomotor disorders confined them to the house. But the patient's mental condition and temperament was a factor. The patients would not ask for medical aid, and they did not want to go to a hospital. In no instance, however, was it necessary to apply to the magistrates' court for compulsory removal. Admission to hospital of cases of severe neglect rarely results in successful rehabilitation, but when once there it is seldom possible for the patient to return to an independent existence at home. While only about one-fifth of the patients referred to a hospital are suitable for continued care at home, the aim must be to treat as many patients as possible in their homes. Should hospital treatment be required, it must, when possible, be temporary. Home is the proper place for the aged; their interests and their place in the family are there. These valuable assets vanish if an old person is uprooted and enters a hospital, where, after a prolonged stay, a decline in his faculties may take place.

Tropical Rural Welfare.—In cooperation with the Colonial Office, the Colonial Department of the University of London Institute of Education, the missionary societies, and the National Federation of Women's Institutes, the Y.W.C.A. of Great Britain is organizing a course in tropical rural welfare. This is intended for wives of British officials and professional men going to posts abroad and the wives of overseas officials and students who accompany their husbands to England. The subjects to be covered in the course include visual aids, drama and literature, cookery and nutrition, child welfare, food cultivation, and cooperative principles. The course will last 11 weeks. In addition, there will be an optional three weeks' observation tour of Scotland or Northern Ireland. Visits will be paid to small farms, women's institutes, and young farmers' clubs.

CORRESPONDENCE

STATEMENTS OF AMERICAN HEART ASSOCIATION COUNCIL ON RHEUMATIC FEVER AND CONGENITAL HEART DISEASE

Protection of Rheumatic Fever Patients

Because questions frequently arise in connection with the protection of rheumatic fever patients in general and children's hospitals, the following statements intended to guide such hospitals are issued by the Council on Rheumatic Fever and Congenital Heart Disease of the American Heart Association. They should be regarded as embodying certain principles that an individual hospital may apply in its effort to achieve protective measures. It should be noted that the term rheumatic fever is considered to include rheumatic fever and rheumatic heart disease, for the purpose of this statement.

1. Attacks of rheumatic fever frequently follow group A streptococcic infections—usually of the upper respiratory tract.

2. Persons who have recovered from an attack of rheumatic fever or who have rheumatic heart disease, even though the rheumatic fever may be quiescent, are especially liable to a recurrence of the disease if they contract a group A streptococcic infection. Moreover, a new rheumatic attack may be induced in a patient in the subacute active stage if he contracts a new infection with group A hemolytic streptococci of a serological type, or types, different from that which previously infected him.

3. The introduction of rheumatic fever patients into hospital wards or other environments, such as outpatient departments, where group A streptococcic carriers may be encountered, exposes them to hazards that should be avoided. To the extent that is reasonably possible in the individual institution, protection of such patients from contact with other patients, visitors, or employees suffering from such hazardous infections should be practiced.

Patients suffering from scarlet fever, erysipelas, or acute glomerular nephritis may be considered specially dangerous even without further laboratory confirmation of the type of organism involved. Sore throat or acute tonsillitis, especially when associated with exudates, distinct fever, and leukocytoses, may ordinarily be considered almost as dangerous. Milder upper respiratory infections are also dangerous. Dust and lint from bedding, handkerchiefs, and clothing in the immediate environment of a person who is expelling streptococci from his mouth or nose are potent sources of infection, as are also dishes and other utensils he uses.

4. Susceptible rheumatic fever patients while in dangerous environments such as open wards should receive treatment (chemotherapeutic or antibiotic drugs) that will markedly decrease their liability to contract such streptococcic infections. Furthermore, it is possible by suitable protective measures to render their environments comparatively free from danger of reinfecting them with group A hemolytic streptococci. For suggested appropriate individual treatment see section below.

5. To the fullest extent possible within the laboratory facilities of the hospital, or those available to the hospital, all reasonable efforts should be made to determine the presence of group A streptococci among patients or personnel of the ward and to deal appropriately with such cases when the organism is identified.

6. Mindful of the above facts and recognizing that in the average general hospital environment complete communicable disease ward precautions and techniques for the protection of the rheumatic fever patient are neither possible nor psychologically desirable, the hospital caring for such patients should nevertheless institute procedures and measures that will protect such patients. Detailed protective procedures should be developed by the individual institution through the collaboration of the appropriate responsible members of the medical, pediatric and laboratory staffs, Nursing Department and Administration.[1]

In developing protective measures that will in effect better protect the rheumatic fever patient from his environment and not others from him, strong emphasis should be placed on appropriate education of the patient, the family, and hospital workers who are in regular or casual contact with rheumatic fever patients.

APPROPRIATE INDIVIDUAL TREATMENT (CHEMOTHERAPEUTIC OR ANTIBIOTIC DRUGS)

The following outline of appropriate treatment of the patient and streptococcic carriers in his environment may be considered adequate:

1. Protecting the patient against streptococcic infections by (*a*) Daily oral administration of small doses (0.5 to 1.0 gm.) of relatively nontoxic sulfonamides, or (*b*) daily oral administration of 200,000 units of buffered penicillin G divided into two doses and given on an empty stomach. Other antibiotics may have a similar prophylactic influence and may be employed, but more experience is available with penicillin.

2. Reducing the danger arising from other patients with streptococcic infections or from carriers of group A hemolytic streptococci.

(*a*) This can be effected by giving large doses of penicillin, or other antibiotics for a period of 10 days to those patients who are expelling streptococci. Such attempted elimination or diminution of the carrier state with respect to hemolytic streptococci should be bacteriologically controlled if possible. (*b*) Patients who have been in contact with a known case of streptococcic infection should be treated in the same way as those with streptococcic infections.

3. Attempting to cure streptococcic infections in a rheumatic fever subject early in the course of such an infection by intensive antibiotic therapy, started promptly and continued for 10 to 14 days.

Prophylaxis of the rheumatic attack is probably most effectively attained by intramuscular administration of antibiotic drugs. It can also often be effected by oral administration of one million units of buffered penicillin G daily, divided into four equal doses given on an empty stomach. Rheumatic fever patients so treated should be carefully studied both clinically, and by suitable laboratory and electrocardiographic techniques, to ascertain whether rheumatic sequelae have been really prevented or only reduced to a subclinical level.

EDWIN L. HARMON, M.D.
MARJORIE T. BELLOWS
HOMER F. SWIFT, M.D.
FREDERICK J. LEVY, M.D.
DORA E. YOUNG

Prevention of Rheumatic Fever

Rheumatic Fever is a recurrent disease that can be prevented. It is now generally agreed that both the initial and recurrent attacks of the disease are usually precipitated by infections with beta hemolytic streptococci. Therefore, the prevention of rheumatic fever and rheumatic heart disease depends upon the control of streptococcic illnesses. This may be successfully accomplished by (1) early and adequate treatment of streptococcic infections in all individuals and (2) prevention of streptococcic infections in rheumatic subjects.

1. Those seeking detailed communicable disease protective procedures from which to pattern specific procedures may refer to "The Control of Communicable Diseases in Man" (American Public Health Association, ed. 7, 1950) and "Guide for the Handling of Communicable Diseases in Hospitals" (New York State Department of Health, 1950).

I. Treatment of Streptococcic Infections

In the general population at least 3% of untreated streptococcic infections are followed by rheumatic fever. Among certain individuals, especially those with previous rheumatic fever, the incidence is much higher. Adequate and early penicillin treatment, however, will prevent most attacks of rheumatic fever and eliminate streptococci from the throat.

A. Diagnosis of Streptococcic Infection

In most instances it is possible to recognize streptococcic infections by their clinical manifestations, but laboratory tests may assist in establishing the diagnosis.

1. Epidemiology: The seasonal pattern and presence of similar cases in the community or household may be helpful. For example, streptococcic infections in the northern United States are most common from January through June. Likewise, a case of scarlet fever in one child would suggest that a sore throat in another has the same etiology.

2. Symptoms: (*a*) sore throat—onset sudden, in the tonsillar area, not in the trachea; (*b*) headache—common; (*c*) fever —variable—but generally from 101° to 104° F; (*d*) abdominal pain—common, especially in children; not too common in adults, but does occur; (*e*) nausea and vomiting—common, especially in children; and (*f*) these symptoms are usually not present: (1) simple coryza, (2) cough, and (3) hoarseness

3. Signs: (*a*) red throat—frequently beefy red, but if seen early the redness may be mild; (*b*) exudate—usually present; (*c*) glands—swollen, tender tonsillar glands at angle of jaw; (*d*) rash—scarlatiniform (characteristic of scarlet fever—not common); and (*e*) discharge—otitis media and sinusitis indicated by (serous or purulent) aural or nasal discharge are frequent complications of Streptococcus pharyngitis.

4. Laboratory: (*a*) white blood count—generally over 12,000 and in children frequently over 20,000, and (*b*) throat culture—positive for hemolytic streptococci.

5. Therapeutic Response: Almost without exception patients with streptococcic infections are vastly improved within 24 hours after penicillin has been started and the temperature normal, or nearly so. This therapeutic response is characteristic, and, if it does not occur, the chances are much against the disease being due to hemolytic streptococci.

B. Treatment of Streptococcic Infections

In order to be effective, treatment should be started immediately when a streptococcic infection is suspected and continued for sufficient time to eradicate the streptococci from the throat. Penicillin is the drug of choice for treating streptococcic infections. Both the oral and the intramuscular routes of administration have been utilized successfully for penicillin therapy of streptococcic infections. Intramuscular injections have been proved to prevent rheumatic fever. The data on the value of oral penicillin as a preventive are less complete.

Oral administration in contrast to intramuscular administration has these advantages: 1. It is not as distasteful to many patients. 2. It requires fewer physician visits. It has these disadvantages: 1. Larger amounts of penicillin must be used. 2. It is difficult to administer to vomiting or refractory children. 3. In some adults it gives rise to persistent diarrhea and pruritus ani. 4. It is difficult to be sure that treatment is continued for sufficient time and given in proper relation to meals to be effective.

1. Recommended Schedules

a. Intramuscular Penicillin.

(1) children: one intramuscular injection of 300,000 units of procaine penicillin with aluminum monostearate in oil every third day for three doses.

(2) Adults: one intramuscular injection of 600,000 units procaine penicillin in aluminum monostearate every third day for three doses.

(Note: Less preferable, but usually effective—two doses as above at three day intervals).

b. Oral Penicillin

(1) First five days: 200,000 to 300,000 units one-half to one hour before meals and at bedtime (total of 800,000 to 1.2 million units per day in 4 divided doses. Smaller amount children—larger amount adults).

(2) Second five days: 200,000 to 250,000 units one-half to one hour before meals. (Total 600,000 to 750,000 units per day in 3 divided doses.)

(Note: To be effective, therapy should be continued for the entire 10 days even though the temperature may return to normal and the patient may feel better within one or two days.)

c. Combination of Intramuscular and Oral Penicillin.

Therapy may be begun with one injection of penicillin (300,000 units procaine penicillin with aluminum monostearate in oil) and then, beginning three days after the injection, continued for an additional seven days with oral penicillin according to the schedule *b* (2) outlined above.

d. Other Medication.

1. Aureomycin is less effective than penicillin in controlling streptococcic infection but is especially useful in those sensitive to penicillin. Dosage: Total 10 mg. per pound of body weight in four divided doses daily for two days. Cut dose in half for remaining eight days of therapy.

2. New preparations of penicillin. These may be effective and even preferable to the treatment schedules outlined, but at present they have not had sufficient trial to warrant their recommendation.

3. Other antibiotics: At present there is inadequate data on their value.

e. Not Recommended for Treatment.

1. Penicillin troches or lozenges.

2. Penicillin followed by sulfonamides.

3. Sulfonamide drugs.

(Note: Recurrences of streptococcic infection should be treated as primary attacks.)

II. Prevention of Streptococcic Infections

A. General Rules for Prophylaxis

1. Who should be treated?

All individuals under the age of 18 who have had rheumatic fever or chorea and all those over this age who have had an attack within five years.

2. When should prophylactic treatment be initiated?

At the end of the second week of the attack of rheumatic fever or any time thereafter when the patient is first seen. (In patients receiving ACTH or cortisone, be cautious that other infections are not masked, since the prophylactic dose is inadequate to treat such concurrent illnesses as pneumonia or meningitis.) Prior to the start of prophylaxis, beta hemolytic streptococci should be eradicated by proper treatment of the patient. (See methods of penicillin therapy recommended above.)

3. How long should prophylaxis be continued?

In children, at least to the age of 18, and in all those above this age, for at least five years from their last attack.

4. Should prophylaxis be continued during the summer?

Yes.

B. Prophylactic Methods

1. Sulfadiazine: This drug has the advantage of being easy to administer, inexpensive, and effective (other newer sulfonamides are probably equally effective). Although resistant streptococci have appeared during mass prophylaxis in the armed forces, this is rare in civilian populations.

a. Dosage: from 0.5 to 1.0 gm. taken each morning throughout the year. The smaller dose is to be used in children under 60 lb.

b. Toxic Reactions: These are infrequent and are usually minor. However, in any patient being given prophylaxis with sulfonamides consider all rashes and sore throats as possible toxic reactions to the drug, especially if they occur in the first eight weeks of prophylaxis. The chief toxic reactions are:

(1) Skin Eruptions

a. morbilliform—much like measles; continue drug with caution.

b. urticarial—best discontinue treatment.

c. scarlatiniform—often associated with sore throat and fever; unsafe to continue drug.

(2) Blood Reactions

a. Leukopenia—discontinue drug if white blood count falls below 4,000 and polynuclear neutrophils below 35% because of possible agranulocytosis which is often associated with sore throat and a rash. Because of these reactions, weekly white blood counts are advisable for the first two months of prophylaxis. (The use of sulfonamides therapeutically for any reason in this period should be preceded by a white blood count.) The occurrence of agranulocytosis after eight weeks of continuous prophylaxis with sulfonamides is extremely rare.

2. Penicillin: Although experience with oral penicillin for the prophylaxis of rheumatic fever is more limited than that with the sulfonamides, the antibiotic promises to be a safe and effective prophylactic agent. Oral penicillin has the desirable characteristics of being bactericidal for hemolytic streptococci and of rarely producing serious toxic reactions. It has the disadvantages of being more costly than sulfadiazine and because of the need of giving it on an empty stomach, of being somewhat more difficult to administer. Oral penicillin represents an alternative drug for rheumatic fever prophylaxis. It is especially important to use this agent for those who do not tolerate sulfadiazine.

a. Dosage: Although other routines of administration may prove satisfactory, the following schedules are suggested: 200,000 to 250,000 units two times daily is recommended. Since penicillin is best absorbed on an empty stomach, the time of administration should be one-half to one hour before a meal or at bedtime. A single dose of 200,000 to 250,000 units before breakfast is less preferable.

b. Toxic Reactions: (1) urticaria; (2) reactions similar to serum sickness; they include fever and joint pains and may be mistaken for rheumatic fever; and (3) angioneurotic edema: Although many individuals who have had reactions to penicillin can subsequently take the drug without trouble, it is safer not to use penicillin, if the reaction has been severe and particularly if angioneurotic edema has occurred.

Burtis B. Breese, M.D., Chairman,
Committee on Prevention of Rheumatic Fever
Marjorie T. Bellows
Edward E. Fischel, M.D.
Ann Kuttner, M.D.
Benedict F. Massell, M.D.
Charles H. Rammelkamp Jr., M.D.
Edward R. Schlesinger, M.D.
American Heart Association
44 E. 23rd St., New York 19.

PROFESSIONAL ENDORSEMENT OF ADVERTISING

To the Editor:—The radio advertising of "pertussin," heard Nov. 27, 8 a. m., station WBZ, Boston, contained a recording, apparently of a mother describing her children, who had persistent and recurrent coughs, and calling in her physician, who advised therapy with "pertussin." From then on, all was well. This was more than a subtle implication of a professional endorsement of "pertussin" and was similar to some cigarette advertising. How far can that professional implication be carried within the bounds of legitimate advertising?

John P. Bowler
Hitchcock Clinic
Hanover, N. H.

CAUTION IN USE OF PHENYLBUTAZONE

To the Editor:—On behalf of my associates and myself, I would like to state that since the publication of our paper "Phenylbutazone Therapy in Arthritis and Other Painful Musculoskeletal Disorders," in The Journal, Nov. 15, 1952, page 1087, the occurrence of several cases of agranulocytosis during therapy with this compound has come to our attention through the manufacturers and other investigators in the field. We made no direct reference to precautions in our preliminary report because they seemed self-evident from the observed reactions enumerated by us.

Now that the preparation is on the market, and in view of the information that has reached us, it seems incumbent on us to emphasize certain elementary safeguards to be carried out by physicians prescribing this drug, according to the facts available at this time. Regular, complete blood cell counts are essential, preferably once a week for the first few weeks, periodically thereafter according to the doses administered, and for a month after therapy with this substance is discontinued. The granulocytes, hemoglobin, and the red blood cell count are watched. Routine, regular urinalysis also is indicated, notably for hematuria.

Patients with a history of repeated cardiac decompensation are poor subjects for the administration of this preparation. Those with heart lesions or hypertension, especially elderly persons, must be supervised carefully for decompensation due to disturbance of water balance. Routine recording of their weight during regular check-ups is necessary to detect weight gain from invisible water retention.

Active ulcers of the gastrointestinal tract represent a risk of irritation or perforation that contraindicates the use of this substance. Even when a history of healed gastric or duodenal ulcer is given, this therapy with this drug necessitates careful observation for possible recurrent symptoms of the ulcer.

It is relevant that our more recent experience with dosage suggests that lower total daily doses (400 mg.) are as effective in many of the patients as the higher amounts (800 mg. daily) used in our original series, so far apparently with a lesser frequency of reactions.

Otto Steinbrocker, M.D.
121 E. 60th St.
New York 22.

SOCIAL SECURITY IN ECUADOR

To the Editor:—I would like to comment on the Foreign Letter about social security in Ecuador published in the Nov. 22 issue of The Journal, page 1237. The correspondent gives a very definite and accurate picture of what is happening there. I know the problem at first hand, because I practiced in the country and I was employed by the social security institution. This trend, which started in Chile and extended with full powers to Ecuador, is unfortunately extending to other Latin American countries. We sincerely hope that this system and all its evils will not reach the United States. This system of medical practice has forced many young physicians to leave the country and practice in other parts of America. Eighty per cent of my class is now located in countries other than Ecuador, even though we know that there is a great need for physicians in the small cities and towns of Ecuador.

Dario Landazuri, M.D.
202½ W. Main St.
Havana, Ill.

WILLIAM BRYAN SANDERS

To the Editor:—William Bryan Sanders, born July 24, 1860, died on July 9, 1952, as a result of a skull injury sustained while walking home from his office in Troy, Ala. He was a graduate of the Southern Medical College of Atlanta, now Emory University, in the class of 1885. The Journal commented editorially on his long active practice in 1950 or 1951, and he was still a member of the A. M. A. at the time of his death. On the day of his accident he was still maintaining his morning and afternoon office hours and had only temporarily discontinued house calls following removal of a cataract.

J. Gillis Sanders, M.D.
Foley, Ala.

COUNCIL ON MEDICAL SERVICE

This is the seventh in a series of studies made by the Committee on Indigent Care of the Council on Medical Service concerning local plans for medical care of the indigent. A general introduction to the series appeared in the May 10, 1952, issue of THE JOURNAL, *pages 188-191. The sixth study (Cheyenne, Wyo.) appeared in the Nov. 29, 1952, issue, pages 1334-1335.*

MEDICAL CARE FOR THE INDIGENT IN CASCADE COUNTY (GREAT FALLS), MONTANA

This is a study of medical assistance made available to indigent and medically indigent residents of Cascade County, Montana. Current county population figures total 52,480, and of these, 40,000 are residents of the county seat, Great Falls. Cascade County is included in this study series advisedly, for here it is aptly illustrated that a political subdivision of relatively small proportions may establish and maintain a smooth-running program extending to the indigent medical benefits that are comparable in scope and quality to those offered in larger, more densely populated areas. Indeed, the indigent of many larger counties might well envy the Cascade County welfare client his medical assistance program.

Stock raising and wheat farming are the two major sources of income for residents of this section of Montana. In addition, the Great Northern and Milwaukee railroads, Anaconda copper mines, and Montana Power Company sustain a substantial proportion of Great Falls' population.

ELIGIBLE POPULATION

The Cascade County Department of Public Welfare is responsible for the health and well-being of the county's indigent and medically indigent citizenry. Subsistence benefits are provided under the five classical programs: general relief (general assistance) and the four forms of categorical assistance. In the parlance of the Cascade County DPW, "public assistance" includes both general and categorical assistance programs. For purposes of uniformity throughout this survey series, however, we shall continue to speak of categorical assistance and public assistance synonymously, and shall consider general assistance as a distinct classification.

TABLE 1.—*Persons Eligible for Medical Aid at Public Expense During July, 1952*

	Number Eligible
General Assistance (Includes Medically Indigent)	32
Public Assistance:	
Old Age Assistance	829
Aid to the Needy Blind	50
Aid to Dependent Children	447
Aid to the Permanently and Totally Disabled	42
Total	1,400

Applicants are certified for all forms of stipendiary assistance by caseworkers from the local welfare department. Public assistance requirements are in compliance with standards established by the Federal Security Administration and the Montana State Department of Public Welfare; the Cascade County DPW "approved" those general assistance eligibility requirements that are promulgated by the state welfare department. Recipients of old age assistance, aid to the blind, aid to the permanently and totally disabled, and the unemployable recipients of general assistance are recertified yearly. Employable general assistance clients may be reinvestigated at any time; aid to dependent children clients are routinely recertified every four months.

All certified welfare clients are equally eligible for medical assistance under the program that will be described. In table 1 are given those eligible during July of 1952. The total number of persons eligible represents 2.7% of the county population.

General assistance case loads are notably low here, for during the summer months all employable persons in Cascade County are employed. The data set forth in table 1 are not the exact case loads; approximations were required to rule out duplication. A fraction of those listed as eligible under aid to dependent children are also clients of the county child welfare service program.

ADMINISTRATION

The legislature of the State of Montana has ruled that the commissioners of each county contract with a licensed local physician for the provision of medical care to the indigent and medically indigent. In Cascade County, this contract is negotiated with the local medical society, i. e., the society as a whole is employed as county physician.

The contract is renegotiated yearly; it provides for physicians' services only. Other medical benefits have been authorized by the Department of Public Welfare upon the counsel of the administrative board of the medical society. Although the final authority remains in the hands of the welfare department, the medical society administers and controls the medical aid program through its elected committees and the Montana Physicians' Service (M. P. S.). The latter is a nonprofit, Blue Shield organization, with which the society contracts for the maintenance of statistical records and the handling of receipts and expenditures of those funds allotted to the society in payment for physicians' services in the medical aid program.

SERVICES AVAILABLE

All certified welfare clients are given free choice of physician as concerns home visits, office calls, and inhospital care. In order to discourage indiscriminate solicitation of the services of several physicians for the treatment of a single ailment, however, the welfare client is required to obtain special authorization prior to the receipt of physicians' services. Such authorization is provided by the DPW "referral to family doctor" form, which entitles the client to a single home or office call. The form provides for re-referral by the initial family doctor to a specialist or to a newly selected family doctor, but otherwise binds the client to a single physician for the remainder of the month of its issuance. In emergency situations, the form may be issued retroactively.

On the completion of a single authorized house or office call, the question of whether additional therapy is required during the month is left to the discretion of the attending physician. If the physician feels that the therapy provided during the single call was sufficient, no additional calls are authorized. If continuation of therapy appears warranted, however, he may provide such services on receipt of the approval of the claims committee of the medical society. Such approval is solicited by contacting one of the committeemen through the local M. P. S. branch office. The presentation of a preliminary diagnosis and the anticipated course of therapy is required. Consultation is required only prior to the authorization of any type of surgery.

Certified welfare clients are admitted to either of Great Falls' two general hospitals without special authorization. For purposes of maintaining records, however, the attending physician is requested to notify the welfare department through the local M. P. S. office at the time of admission. In any event, the welfare department is kept informed of such commitments by the hospital administrators.

Important to minimal costs, the program provides for prompt referral of those indigent persons who require nursing care (as opposed to hospitalization) to the Cascade County Convalescent Hospital. This institution, as its name implies, is primarily concerned with caring for the convalescent. However, all of its 25 beds are seldom required for this purpose; consequently, these facilities are also used to a varying extent as a home for certain ambulatory old age assistance clients. The medical aid program provides that physicians make both routine and emergency visits to the convalescent hospital. Great Falls' hospital and convalescent facilities are more than adequate. Thus, the services of private nurses, though authorized by the medical assistance program, are seldom utilized.

Physicians are provided special welfare blanks for prescription of pharmaceuticals. In the interests of economy, the medical society has approved the preparation of a Cascade County Drug Formulary, in which are listed those drugs and the maximum amounts of each that may be prescribed. Current listings in the

United States Pharmacopeia and National Formulary form the basis of this formulary; proprietary and experimental medicines are excluded. Authorization from a member of a special committee of the medical society is prerequisite to any departure from the formulary. Authorization is also required for the provision of special appliances.

Due to a unique method of paying for pharmaceuticals, a disbursing order must be obtained from the welfare offices before prescriptions may be filled. Given the prescription on a welfare form, a disbursing order, and special authorization for departures from the formulary, any licensed pharmacist in Cascade County may complete the prescription.

The facilities of Great Falls' two general hospitals are available to certified welfare clients requiring physiotherapy or laboratory services. Ambulance services are provided by the local mortuaries. It is not the province of the medical aid program to provide for the services of dentists, opticians, or optometrists; however, under special circumstances, these services may be acquired at public expense through the auspices of the welfare department.

PROVIDERS OF SERVICES

All of Cascade County's 70 actively practicing physicians are members of the county medical society and consequently, are eligible for participation in the medical aid program. In view of the contracts drawn by the society with the Cascade County Commissioners and Montana Physicians' Service, individual physicians must formally agree to accept the negotiated fee schedules and to abide by the rulings of those committees of the medical society that regulate the program. All of the 70 active society members have signed this agreement and actually do participate in the medical aid plan.

Great Falls' two general hospitals are Montana Deaconess Hospital and Columbus Hospital, with 200 and 253 beds respectively. Welfare clients admitted to either of these institutions are in no way segregated. They are given ward beds when available; if the wards are filled, semiprivate accommodations are provided.

The City-Council Health Department in Great Falls augments the medical aid plan through its programs directed toward health education and the control of contagious diseases. Health department nurses conduct classes on child care and instruct families in the care of convalescents.

MEDICAL SOCIETY RELATIONSHIP

The 70 actively practicing members of Cascade County Medical Society naturally fall into three groups of approximately equal size. These are (1) physicians associated with the Great Falls Clinic, (2) those affiliated with smaller clinics, and (3) those in independent private practice. Wherever feasible, each of these groups is represented on each of the society's committees.

The president of the medical society and six member physicians (two from each group), elected for terms of one to three years, comprise the society's administrative board. The members of this board act as trustees and correlators of the welfare medical program. Their intimate control of the program is expedited by four additional committees, to wit, the committee on claims, on consultation, on formulary, and on expensive drugs and appliances.

The claims committee is comprised of three members, one from each of the aforementioned physicians' groups. The society elects a single member quarterly for a term of nine months. Committee members are individually charged first with authorizing any continuation of therapy beyond that provided through the single monthly call routinely authorized by the DPW, and second, with providing the consultation prerequisite to surgery. The committee meets monthly to review physicians' bills as concerns adherence to the fee schedule and as to the proper authorization for the therapy undertaken. The two physicians comprising the consultation committee, one from the staff of each of the two general hospitals, are appointed for terms of six months by the chairman of the administrative board.

Once every week, the administrators of both Montana Deaconess and Columbus hospitals submit to the Department of Public Welfare a list of those welfare clients who have been receiving inhospital care for a period in excess of seven days. The list is, in turn, presented to the consultation committee member representing the hospital concerned. The physician committeeman reviews each case listed and makes recommendations to the attending physician or to the welfare department as to the advisability of continued hospitalization, transfer to the Convalescent Home, etc. In effectively reducing the number of inhospital patient days, the committee plays a very vital role in the over-all economy of the program.

The committee on formulary and the committee on expensive drugs and appliances are similarly organized. Each is comprised of three physicians (one from each of the practicing groups), elected yearly on the floor of the medical society. The committee on formulary is responsible for the composition and the revision of the Cascade County Drug Formulary. The committee on expensive drugs and appliances is the judiciary body responsible for the authorization of departures from the formulary and procurement of prosthetic devices.

PAYMENT FOR SERVICES

The current contract between the medical society and the county commissioners stipulates that monthly prepayment in the amount of $2.00 per person eligible for medical assistance be rendered to the M. P. S. for physicians' services. In addition, the welfare department has agreed to pay a flat $75 per month toward the administrative costs of the M. P. S. Thus in June, 1952, with 1,403 persons eligible, the M. P. S. received a lump sum payment from the DPW of $2,806 plus $75, or $2,881. In table 2 are presented M. P. S. statistics as to the disbursements of these funds.

TABLE 2.—*Montana Physicians' Service Receipts and Expenditures for Cascade County Welfare Medical Program During June, 1952* *

	Receipts	Expenditures
Receipts for Physicians' services	$2,806.00	.....
Medical Society's 10% of $2,806.00	.....	$ 280.60
Administrative costs (Total)	.....	238.88
DPW contribution	75.00	.....
Payment to Physicians—5,738 ½ units @ 55¢	.....	$3,156.18
Balance Brought from Reserve	$ 794.66	.....
Totals	$3,675.66	$3,675.66

* These data were abstracted from a regular monthly report submitted to the Cascade County Medical Society.

The medical society has elected to set aside 10% of its income from the program for purposes of bringing guest speakers to the society's yearly scientific meetings. This fraction, plus those administrative costs in excess of $75, are automatically deducted from total M. P. S. receipts every month. The remainder, then, is distributed among individual physicians.

A fee schedule developed by the M. P. S. for the Montana Veterans Administration is used as a basis for proration of available funds among physicians. This schedule lists fees that are, in the main, comparable to private rates, i. e., $3.00 for office calls and for visits to hospitals and the convalescent home during the day, $5.00 for house calls during the day, and $7.00 for all night calls. Where the Cascade County medical assistance program is concerned, however, these monetary values are converted to units (one dollar equals one unit).

At the beginning of every month individual physicians of Cascade County submit to the M. P. S. statements for services rendered to welfare clients. The claims committee of the medical society reviews adherence to the fee schedule and to the course of therapy as previously authorized. Then, approved bills are paid by the M. P. S. at the rate of $.55 per unit. Normally, this payment does not exhaust the funds available for that month, so that a reserve is accumulated. In July, however, (table 2), credits for services rendered totaled 5,738 ½ units and payment at $.55 per unit required a greater amount of money than was available for the month. Thus, the reserve fund was drawn upon.

If, at the end of each fiscal year, the reserve fund is not exhausted, this money is prorated to physicians as based on the total units credited each of them during that year. In 1951, this additional payment was at the rate of $.20 per unit.

The rationale behind this rather involved method of payment is its provision for an equitable distribution of available funds

in spite of fluctuating demands for medical assistance. With the value of the unit totalling $.75 in 1951 ($.55 plus $.20), physicians were paid for services to welfare clients at approximately 75% of private rates.

Regardless of the accommodations used, the Deaconess and Columbus hospitals are remunerated at the minimum bed rate, currently $9.00 per patient day, for ward care provided assistance clients. The payment for other hospital services, including use of x-rays, physiotherapy, laboratory services, etc., is assessed at full private patient rates. Old age assistance, aid to the blind, and aid to the permanently and totally disabled clients are not automatically eligible for hospitalization at public expense. Rather, they are reinvestigated at the time of commitment and are required to exhaust all available cash on hand before the Department of Public Welfare will subsidize any portion of their hospitalization.

In spite of the provision in the 1949 amendment to the Social Security Act for direct payment to vendors of medical services, the laws of the State of Montana still require that in order to achieve federal and state matching, the monies paid for pharmaceuticals must pass through the hands of the individual welfare client. Thus, the monthly stipends of Cascade County's public assistance clients may be increased by a maximum of $5.00 for this purpose. If this stipendiary increase is insufficient to cover the cost of all necessary pharmaceuticals, the balance is paid directly by the DPW. Each case must be handled individually; the welfare board disbursing order stipulates what portion of each bill must be paid by the client and what portion will be underwritten by the DPW. Pharmacists are paid for welfare prescriptions at their standard retail prices.

COSTS AND FINANCIAL SUPPORT

In table 3 are given the costs of medical services provided to the indigent and medically indigent during July, 1952. The costs per eligible person were computed by dividing the total costs by the total eligibility as brought forward in table 1, viz., 1,400 persons. The cost of the entire program is, of course, lower than that of a typical winter month, during which the total eligibility, i. e., the welfare case load, is increased. On cursory inspection, it may appear that the costs of hospitalization are disproportionately high. The total cost of hospitalization, however, is a function of the utilization of medical aid benefits, whereas the total cost of physicians' services is a function of eligibility alone. Thus, these data may bespeak an abnormally high utilization.

TABLE 3.—*Total Costs and Costs per Person Eligible for Medical Assistance During July, 1952*

	Total Cost	Cost per Eligible Person
Physicians' Services	$ 2,800.00	$2.00
Hospitalization	6,518.17	4.65
Convalescent Home	2,824.17*	2.02
Drugs and Appliances	707.21	.51
Others	80.00	.06
Totals	$12,929.55	$9.24

* This figure represents the costs of convalescent home care, which were in excess of subsistence stipends.

The total cost of drugs and appliances as presented here includes both that fraction paid directly by the DPW and that fraction paid to pharmacists by way of increasing the monthly stipends to individual welfare clients. An estimated 30% of the $707.21 was paid through stipendiary advances.

Approximately 10% of the total cost for hospitalization was met by old age assistance, aid to the blind, and aid to the permanently and totally disabled clients without welfare assistance from either state or county. Thus, the total cost of the medical assistance program as given in table 3 is some $650 in excess of the actual cost to the welfare department.

The financial responsibility involved in the provision of physicians' services to the indigent and medically indigent in Montana has been delegated by the state legislature to the individual counties. In Cascade County, the costs of hospitalization must also be met principally through local funds, since public assistance stipendiary grants alone approximate the maximums imposed by the federal and state legislatures. Therefore, excepting some small amount of matching of the costs of pharmaceuticals, the Cascade County medical assistance program is supported entirely by local funds.

The legislature of the State of Montana allows county commissioners to assess a maximum property tax of 10 mills for the support of the entire welfare program. Should this maximum tax be imposed and the monies so obtained be exhausted before the end of the fiscal year, the state will grant to the commissioners those funds that may be necessary to continue the program. Should a tax less than the maximum be imposed, supplementary state funds are provided as a loan. In Cascade County, the current welfare tax is 9.6 mills.

SUMMARY

The several agencies and individuals most intimately concerned with medical care benefits are bound by written contract to their various roles in the Cascade County medical assistance program. The program is centered about three such contracts, viz., a contract between the Cascade County Commissioners and the county medical society, a contract between the medical society and the Montana Physicians' Service, and a contract between the society and the individual physician.

In compliance with the terms of the current medical society-county commissioner contract, the society receives prepayment in the amount of $2.00 per eligible person in return for the provision of physicians' services to all certified welfare clientele. The statistical facilities of the Montana Physicians' Service are utilized by the medical society for the administration of this contract. Within the society, committees are set up for regulation of the program's activities. The major portion of those monies awarded to the society under the contract are prorated among participating physicians.

All certified welfare clients are equally eligible for benefits provided by the program. In that both free choice of physician and free choice among all local vendors of medical services is offered, the welfare client is extended medical care which is not only quantitatively but also qualitatively equal to that available to the private patient.

The authorization procedures required by the program might appear cumbersome for the physician as well as the welfare client. In truth, regulations have been made very elastic. The physician's application for authorization to continue therapy beyond a single home or office call involves merely phoning the local M. P. S. office. The M. P. S. later contacts a member of the claims committee. Then, unless the attending physician is informed to the contrary within some 48 hours, he simply assumes that authorization has been granted.

The statutes of the Montana state legislature have notably affected both the operation and the economy of Cascade County's medical assistance program. One of the primary objectives of prepayment programs founded in other parts of the country has been the achievement of greater federal and state matching as effected through distribution of the costs of medical assistance among all those eligible, such that federally imposed maximum grants were not exceeded. However, the law of the State of Montana specifies that the costs of maintaining a "county physician" must be met entirely by county funds. In Cascade County, the medical society acts as county physician; thus, this edict precludes any state or federal matching in its payment.

Furthermore, state ordinances complicate the picture as concerns payment for pharmaceuticals. Prior to the 1949 amendment of the Social Security Act, the administrative problem involved in the payment of all assistance monies to individual clients was by no means peculiar to the state of Montana. But, with the endorsement of direct payment to vendors of services, this source of complexity has been eliminated in many states.

Notwithstanding these legal limitations, the Cascade County Department of Public Welfare, the medical society, the M. P. S., and other local providers of medical services have cooperated in both the creation and the effectual implementation of a medical aid program of which any community might well be proud. The unfaltering interest apparent among those persons even remotely connected with the program, now in operation over three years, supports the contention that the citizens of Cascade County will through the years continue to provide to their indigent the very highest quality of medical care.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Ind. Hyg. & Occupat. Medicine, Chicago

6:293-380 (Oct.) 1952

Submarine Rescue and Escape. H. J. Alvis.—p. 293.
Inhalation of Sulfuric Acid Mist by Human Subjects. M. O. Amdur, L. Silverman and P. Drinker.—p. 305.
Results of Five-Year Investigation of Air Pollution in Cincinnati. J. Cholak, L. J. Schafer and R. F. Hoffer.—p. 314.
Studies on Fate of Parathion in Rabbits, Using Radioactive Isotope Techniques. J. A. Jensen, W. F. Durham and G. W. Pearce.—p. 326.
Temporary Changes in Acuity of Human Ear Following Exposure to Intense Noise. J. B. Gallagher and J. E. Goodwin.—p. 332.
Etiology of Corundum Smelter's Lung. (Bauxite Worker's Lung, Shaver's Disease.) H. Gärtner.—p. 339.
*Acute Carbon Monoxide Poisoning: Analysis of 105 Cases. J. W. Meigs and J. P. W. Hughes.—p. 344.
Chronic Oral Toxicity of Chlordan to Rats. L. Ingle.—p. 357.
Absorption and Excretion of Inhaled Fluorides: Further Observations. G. H. Collings Jr., R. B. L. Fleming, R. May and W. O. Bianconi.—p. 368.

Acute Carbon Monoxide Poisoning.—The manifestations of acute carbon monoxide poisoning observed in 105 patients admitted to the Grace-New Haven Community Hospital between 1920 and 1948 were summarized. A number of signs and symptoms previously considered unusual were shown to be common in this series. These were skin lesions such as circumscribed erythema, erosion, vesiculation, or ecchymosis; transient abnormal pulmonary findings such as rales, rhonchi, or dullness; excessive sweating; liver enlargement; localized pain or soreness in any part of the body; and localized edema. Generalized cyanosis or flushing was more commonly observed than a cherry-pink discoloration of the skin. All these signs except pain or soreness and edema correlated statistically with severity of poisoning, as did abnormalities of the nervous system, evidence of bleeding, mental relapse after recovery of normal mental status ("pseudo-recovery"), temperature of 102 F (38.8 C) or higher, respirations of 30 per minute or higher, albuminuria, abnormal urinary sediment, and leukocyte count of 18,000 per cubic millimeter or higher. The neutrophile count was about three times the normal level, while the lymphocyte and eosinophile counts were significantly lower than normal in severely poisoned patients. These signs may be manifestations of direct hypoxic injury to the oxygen-sensitive cells of the central nervous system as well as of pituitary-adrenal stimulation. Suffused mucous membranes, irregular cardiac rhythm, localized edema, vomiting, headache, pulse rate of 110 per minute or higher, abnormal blood pressure, erythrocyte count of 5,200,000 per cubic millimeter or higher, and glycosuria were almost as common in mild as in severe poisoning. It is suggested that these latter manifestations, in contrast to those correlating with severe carbon monoxide poisoning, are precipitated by responses of the autonomic nervous system and that the extent of response is a function of the individual more than of the degree of intoxication. A combination of severe hypoxic injury to the brain and pronounced disturbance of the autonomic nervous system seemed to indicate a poor prognosis, since the seven patients who died showed evidence of such a combination. Despite the existence of general characteristics of acute carbon monoxide poisoning, individual patients showed widely variable manifestations within the general framework observed.

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Titles marked with an asterisk (*) are abstracted.

A.M.A. Arch. Neurology and Psychiatry, Chicago

68:425-576 (Oct.) 1952

Architectonic Distribution of Acetylcholinesterase in Frontal Isocortex of Psychotic and Nonpsychotic Patients. A. Pope, W. Caveness and K. E. Livingston.—p. 425.
Nature and Treatment of Tics in Adults. A. D. Weisman.—p. 444.
Frontal Lobotomy in Schizophrenic Patient with Advanced Hydrocephalus. L. H. Margolis, A. Simon and J. E. Adams.—p. 460.
Thought as Form of Sensation, and Agnosis of Thought. R. M. Brickner and A. S. Barnum.—p. 466.
Congenital Papilloma of Choroid Plexus: Report of Case, with Observations on Pathogenesis of Associated Hydrocephalus. H. Braunstein and F. Martin Jr.—p. 475.
Exosomesthesia or Displacement of Cutaneous Sensation into Extrapersonal Space. M. F. Shapiro, M. Fink and M. B. Bender.—p. 481.
Insulin Coma and Group Psychotherapy. T. F. Morrow, S. P. Laucks and W. K. McKnight.—p. 491.
Titration of Central-Nervous-System Depression. G. Chen and R. Portman.—p. 498.
Blood Ketone Concentration in Patients with Mental and Emotional Disorders. J. I. Kitay and M. D. Altschule.—p. 506.
Joint Effect of Some Central-Nervous-System Depressants. G. Chen and R. Portman.—p. 510.
Role of Gelatinous Substance of Spinal Cord in Conduction of Pain. A. A. Pearson.—p. 515.
Blood Eosinophiles in Alcoholic States. J. E. Oltman and S. Friedman.—p. 530.
Cholesterol Changes in Schizophrenic Patients During Insulin Therapy. J. R. Goodman and S. Kanter.—p. 534.
Etiology and Treatment of Urinary Lithiasis in Severe Poliomyelitis. C. D. Creevy and F. Y. Tichy.—p. 539.
Effects of Hypnotic Suggestion on Pain Perception and Galvanic Skin Response. L. J. West, K. C. Niell and J. D. Hardy.—p. 549.
Blood Clotting in Patients with Mental Diseases Before and After Treatment. M. D. Altschule, R. M. Restaino and E. P. Siegel.—p. 561.

A.M.A. Arch. Surgery, Chicago

65:487-652 (Oct.) 1952

Plication of Small Intestine for Obstruction Due to Adhesions—Noble Procedure. E. C. Weckesser, J. F. Lindsay Jr. and F. A. Cebul.—p. 487.
Splenic Studies. II. Portal Hypertension in Children Associated with Gastroesophageal Hemorrhage. H. B. Shumacker Jr. and H. King.—p. 499.
Use of Fibrinolysin in Surgical Complications. R. R. Margulis and B. E. Brush.—p. 511.
Effect of Direct Anastomosis of Common Bile Duct to Duodenum: Experimental Study. A. Large.—p. 522.
Chronic Pancreatitis Treated by Roux Type Jejunal Anastomosis to Biliary Tract. P. F. Partington.—p. 532.
Criteria for Spine Fusion with Use of "H" Bone Graft Following Disc Removal: Results of 100 Cases. F. E. Stinchfield and W. A. Sinton.—p. 542.
Fat Embolism: Clinical Investigation. M. M. Musselman, W. W. Glas and T. D. Grekin.—p. 551.
Eventration of Diaphragm. W. C. Beck and D. S. Motsay.—p. 557.
Simplified Technique for Treatment of Esophageal Hiatus Hernia. W. C. Gardner, J. B. Hartzell and W. M. Tuttle.—p. 564.
Surgical Management of Intrathoracic Goiter Through Sternum-Splitting Approach. J. M. Dorsey and A. McKinnon.—p. 570.
Urinary Excretion of Electrolytes and Water Before, During, and After Surgery. H. E. Snyder, C. D. Snyder and L. D. Bunch.—p. 578.
*Therapeutic Effectiveness of Artificial Kidney. F. J. Lewis, M. P. Reiser, R. H. Egdahl and K. T. Chung.—p. 588.
*Vena Cava Ligation in Thromboembolic Disease. F. M. Owens Jr.—p. 600.
Intra-Abdominal Venography Following Inferior Vena Cava Ligation. C. T. Surington and A. F. Jonas Jr.—p. 605.
Impedance Plethysmography in Study of Peripheral Circulation. W. S. Coxe, H. B. Shumacker Jr. and L. W. Freeman.—p. 611.
*Surgical Treatment of Mitral Stenosis. O. C. Julian, W. S. Dye Jr., L. A. Baker and M. S. Sadove.—p. 621.
Toxoid Immunization of Experimental Gas Gangrene: Further Studies. W. A. Altemeier, R. Coith, R. Sherman, M. A. Logan and A. Tytell.—p. 633.

Therapeutic Effectiveness of Artificial Kidney.—Lewis and associates used a Kolff-type of artificial kidney 38 times in the treatment of 21 patients. Twelve of these patients had acute renal failure of various types; seven had chronic renal failure; one had hepatic cirrhosis, and one had encephalitis complicated by diabetic acidosis. Many of these patients were temporarily benefited by treatment with the artificial kidney, but only one is still living. A prompt lowering of the protein metabolite levels

in the blood and an adjustment of the serum electrolyte levels toward normal were obtained in every case. The authors suggest that the artificial kidney be used in patients with acute renal failure due to lower nephron nephrosis in whom serious hyperkalemia has developed and in those who have had oliguria for over six days. In their experience, patients who might be saved by use of the artificial kidney when conservative treatment alone was insufficient have been rarely encountered. In patients with chronic uremia the artificial kidney might occasionally be helpful in preparation for surgical treatment.

Vena Cava Ligation in Thromboembolic Disease.—Owens reports on 12 patients who had ligation of the vena cava for thromboembolism at the Minneapolis Veterans Administration Hospital. In eight patients the operation was undertaken because it was impossible to control thromboembolism with anticoagulant therapy. In four patients in whom subsequent surgical operations were anticipated, vena cava ligation was undertaken to prevent further embolisms at the time of the future surgery. Two patients of the first group underwent additional surgical treatment at later dates. No embolization occurred after ligation of the vena cava, and all patients are alive at present. Postoperative hematoma in two patients offered no serious problem. Postoperative activation of thrombophlebitis occurred in four patients; in these the early postoperative symptoms were more marked than in the other eight. Some edema persisted in 10 patients, and small stasis ulcers developed in 2 patients, but these were promptly cured by conservative means. Four patients complained of a tired feeling in the legs after walking or long standing. With the exception of one patient who has had an amputation for arteriosclerotic gangrene of the leg, the patients get along well enough to earn a living. The author concludes that vena cava ligation should be used as a lifesaving procedure in selected cases of thromboembolism. The results of this treatment are satisfactory, and the symptoms that may be seen after this operation are a result of iliofemoral thrombophlebitis and are not a consequence of ligation of the vena cava.

Surgical Treatment of Mitral Stenosis.—Julian and associates say that the division in the line of pathological fusion of the valve leaflets is the method of choice in mitral stenosis. In selecting patients for commissurotomy the clinical stage of the disease should be considered. The first or asymptomatic stage is characterized by a murmur detectable on auscultation; the second stage, by dyspnea on exertion; and the third stage, by pulmonary hypertension and edema, producing dyspnea, cough, bloody sputum, and brief attacks of right heart failure. Right heart failure is typical of the fourth stage. The commissures were separated digitally in 16 of the 42 patients, by cutting in 19, and by a combination of both in 5. In two patients no commissurotomy was done. Excellent results were obtained in 6 of the 8 patients in stage 2, 14 of the 24 patients in stage 3, and 2 of the 10 patients in stage 4. Moderate improvement, meaning a good increase in the ability to exercise without symptoms and reduction or abolition of signs of right heart failure, was obtained in one patient in stage 2, six patients in stage 3, and four patients in stage 4. Five patients died. One death was due to unrecognized pericardial effusion; one was due to renal failure with uremia in a patient with intractable right heart failure; and two were the result of congestive heart failure. One death occurred in a diabetic patient eight months after the operation.

American Journal of Clinical Pathology, Baltimore

22:925-1038 (Oct.) 1952

Cerebral Residua of Acute Carbon Monoxide Poisoning. F. R. Dutra. —p. 925.
Inhibition of Experimental Arteritis by Cortisone, Salicylate and Related Compounds. D. F. Moore, J. Lowenthal, M. Fuller and L. B. Jaques. —p. 936.
Effect of Cortisone on Inflammation in Mice: Minimum Dose Required to Affect Eosinophil Count, Inflammation, Wound Healing and Size of Spleen. D. M. Spain and N. Molomut.—p. 944.
Prophylactic Effect of Penicillin Tablets on Throat Flora. M. A. Smith, D. Skinner and L. Erickson.—p. 948.
Cardiolipin and Improved Kolmer Antigens in Complement-Fixation Test for Syphilis. J. A. Kolmer, E. R. Lynch and C. E. Black.—p. 952.
Method for Training Civilians in Blood Grouping Tests in Event of Atomic Disaster: with Pilot Test Results. W. C. Nelson.—p. 958.

American Journal of Obstetrics & Gynecology, St. Louis

64:713-950 (Oct.) 1952. **Partial Index**

Observations on Stress Incontinence of Urine. T. N. A. Jeffcoate and H. Roberts.—p. 721.
Inversion of Vagina and Prolapse of Cervix Following Supracervical Hysterectomy, and Inversion of the Vagina Following Total Hysterectomy. L. E. Phaneuf.—p. 739.
Cortisone and Pregnancy: Experimental and Clinical Study of Effects of Cortisone on Gestation. E. J. DeCosta and M. A. Abelman.—p. 746.
Leukoplakia of the Vulva. II. N. F. Miller, G. M. Riley and M. Stanley. —p. 768.
*Spread of Benign and Malignant Endometrium in Lymphatic System with Note on Coexisting Vascular Involvement. C. T. Javert.—p. 780.
What is Cancer in Situ of the Cervix? Is it the Preinvasive Form of True Carcinoma? A. T. Hertig and P. A. Younge.—p. 807.
Carcinoma in Situ of Cervix: General Consideration. J. L. McKelvey. —p. 816.
*Methods of Management of Carcinoma in Situ of Cervix. B. Carter, K. Cuyler, W. L. Thomas and others.—p. 833.
Pre-Eclampsia-Eclampsia Does not Cause Permanent Vascular-Renal Disease. W. J. Dieckmann, R. C. Smitter and L. Rynkiewicz.—p. 850.
Premature Spontaneous Rupture of the Membranes. L. A. Calkins. —p. 871.
Diverse Origins of Brenner Tumors. R. R. Greene.—p. 878.
Choice of Cesarean Section. C. T. O'Connor.—p. 899.
Earlier Detection of Recurrent Cancer of Uterine Cervix by Vaginal Smear. J. B. Graham and J. V. Meigs.—p. 908.
Possible Role of Hyperheparinemia in Human Sterility. J. H. Olwin, C. C. Draa and H. C. Baum.—p. 915.
Repair of Large Rectocele: Report on Cannreuther Technique. J. A. Hepp and E. F. Boyd.—p. 921.
Brief, Painless Parturition. A. Baptisti Jr.—p. 923.

Lymphatic Spread of Endometrium.—Javert investigated the lymphatic spread of endometrium at the time of laparotomy in order to better understand two related diseases of the endometrium, namely, endometriosis and adenocarcinoma. The study started with the selective removal of an enlarged left ureteral node from a patient with extensive pelvic endometriosis. Benign endometrium was found in the node. This led to a similar investigation in a case of endometrial carcinoma, and a hypogastric node was removed that proved to be cancerous. The scope of the investigation broadened to include study of lymph nodes removed for other cancers of the genital tract. To date, a total of 153 patients have had either selective or complete lymphadenectomy, and 10 or 6.5% yielded benign endometrium. The incidence was 29% in 34 patients with endometriosis. Of 50 patients with endometrial carcinoma, 46 had selective and 4 had complete lymphadenectomy. Pelvic node metastases were present in 14, and 10 of these had associated endometriosis. Pelvic lymph node metastases occur much more frequently (28%) than adnexal spread (10 to 12%), yet the adnexa are nearly always removed at operation for endometrial cancer. Radical hysterectomy with complete pelvic lymphadenectomy is the procedure of choice for endometrial carcinoma. When the lymph nodes reveal metastases, complete lymphadenectomy is of slight curative value, because of the high incidence of venous involvement found in the uterus (57%) and paranodal vessels (36%). Presence or absence of lymph node metastases provides a far better basis for prognosis than histological grade. There was only one fatality among the 36 patients in whom the nodes were free of metastases; whereas only four of the 14 in whom the nodes contained metastases are alive. The selective or complete lymphadenectomy caused no complications or death; however, ureteral fistula, bladder dysfunction, and thrombosis may occur. Selective lymphadenectomy is worthless from the standpoint of cure when the nodes contain metastases. Under such circumstances, a second stage operation should be as radical as possible, unless vascular metastases have been observed. If, on the other hand, the nodes are free of metastases, nothing further need be done. The ultimate cure for metastatic endometrial cancer lies in the development of a substance that can be given intravenously to assist in the destruction of the cancer emboli and thrombi in situ.

Management of Cervical Carcinoma in Situ.—Carter and associates describe methods used for the diagnosis, the treatment and the follow-up of 126 gynecologic and 25 obstetric patients with cancer in situ of the cervix. They believe that cytological techniques represent the greatest advance in the detection and control of early cancer of the cervix and that these techniques should be used routinely for all gynecologic and obstetric patients. The multiple punch-biopsy method cannot be dispensed

with, but it should be followed by repeated cytological studies and by cold-knife cone biopsies of the cervices in patients who show epithelial atypia in cytologic smears despite negative results of punch-biopsy. In patients who show epithelial atypia in cytologic smears and doubtful punch-biopsy findings the cold-knife cone biopsy is the one safe and accurate method for diagnosis. Of the 126 gynecologic patients 21 are being followed with multiple punch or cold-knife cone biopsies. Twenty patients had vaginal hysterectomies with conservation of the ovaries, and four had vaginal hysterectomies with removal of the tubes and ovaries. Eighteen patients had abdominal panhysterectomies with conservation of the ovaries, and 32 had abdominal panhysterectomies with bilateral salpingo-oophorectomies. Six servical stumps were removed for cancer in situ. Irradiation was used in only two patients who had medical diseases that made hysterectomy seem hazardous. The authors do not consider radical hysterectomy and radical pelvic lymphadenectomy indicated for any patient with cancer in situ. The 25 obstetric patients with cervical cancer in situ were observed among 2,985 newly registered obstetric patients. Twelve of these received no other treatment than punch-biopsies or cold-knife cone biopsies. Seven patients had vaginal hysterectomies with conservation of the ovaries, and four had abdominal panhysterectomies with conservation of the ovaries. Two patients had panhysterectomies with bilateral salpingo-oophorectomies. No patient in the entire series died, and none has yet developed invasive carcinoma. The authors also discuss data obtained from questionnaires sent to gynecologists and pathologists regarding diagnostic and therapeutic procedures in cervical cancer in situ.

American Journal of Physiology, Washington

170:239-476 (Aug.) 1952. **Partial Index**

Effect of Osmotic and Mercurial Diuresis on Simultaneous Water Diuresis. L. G. Wesson Jr. and W. P. Anslow Jr.—p. 255.
Effects of Experimental Concussion on Blood Flow, Arterial Pressure and Cardiac Rate. G. W. Brown, M. L. Brown and H. M. Hines.—p. 294.
Role of Potential Wave Spreading Along Myelinated Nerve Fiber in Excitation and Conduction. J. Hodler, R. Stämpfli and I. Tasaki. —p. 375.
Observations on Serum Prothrombin Conversion Accelerator in Radiation-Induced Pancytopenia. G. J. Jacobs, E. P. Cronkite and S. G. White. —p. 390.
Effect of Altitude-Induced Polycythemia and Reticulocytosis on Tolerance of Rats to Radiation. W. W. Smith, W. S. Cool, F. Smith and P. D. Altland.—p. 396.
Kinetics of Radiopotassium in Circulation. W. G. Walker and W. S. Wilde.—p. 401.
X-Irradiation and Bacteremia: Studies on Roentgen Death in Mice. J. W. Osborne, H. S. Bryan, H. Quastler and H. E. Rhoades.—p. 414.
Cholinesterase Activity, Weight, Water Content and Pathology of Small Intestine of Rats Subjected to X-Radiation. R. A. Conard.—p. 418.
CO_2 Tension Across the Placental Barrier and Acid-Base Relationship Between Fetus and Mother in Rabbit. I. M. Young.—p. 434.
Effect of Cortisone, Corticotropin and Adrenalectomy on Plasma Sulfhydryl and Protein Levels. B. Shacter and C. Entenman.—p. 442.
Effects of Intravenous Infusion of Potassium on Liver Glycogen. R. A. Seibert, R. A. Huggins and R. Saxton.—p. 461.
Alkaline Phosphate and Amylase of Plasma After Hepatectomy. E. V. Flock, M. A. Block, J. L. Bollman and F. C. Mann.—p. 467.

American Review of Tuberculosis, New York

66:391-508 (Oct.) 1952

*Isoniazid (Isonicotinic Acid Hydrazide) in Treatment of Miliary and Meningeal Tuberculosis. C. M. Clark, D. F. Elmendorf Jr., W. U. Cawthon and others.—p. 391.
Studies on Metabolism of Virulent and Avirulent Mycobacteria. N. B. Holmgren and G. P. Youmans.—p. 416.
Prevention of Deformities Following Thoracoplasty. J. D. Murphy, I. J. Amrhein, F. P. Ilasi and others.—p. 436.
Study of Pain Threshold in Tuberculous Patients. T. H. Lorenz, D. E. Olson, and M. J. Musser.—p. 449.
Bronchiectasis as Seen in Ambulant Clinic Service: Follow-Up Study of 49 Cases Over a Minimum Period of Nine Years. A. McKim.—p. 457.
Isoniazid in Experimental Tuberculosis of Guinea Pigs Infected with Tubercle Bacilli Resistant to Streptomycin and Para-Aminosalicylic Acid. A. G. Karlson and W. H. Feldman.—p. 477.
In Vivo and In Vitro Effect of Streptomycin on Streptomycin-Resistant Tubercle Bacilli. W. F. Kirchheimer and G. P. Youmans.—p. 486.

Isoniazid in Miliary and Meningeal Tuberculosis.—Isoniazid was used in the treatment of 25 children and adults with acute generalized hematogenous (miliary) tuberculosis, tuberculous meningitis, or a combination of the two. With few exceptions, all patients received approximately 10 mg. of isoniazid per kilogram of body weight daily for one week, followed by a dose of 5 to 7 mg. per kilogram of body weight daily thereafter. It is planned to continue the chemotherapy of each patient for a total of 12 months. Isoniazid was used as the sole antituberculous drug in 14 patients with acute miliary tuberculosis, 4 of whom also had meningitis. Isoniazid, together with, or subsequent to, streptomycin was given to the remaining 11 patients with tuberculous meningitis, 2 of whom also had miliary tuberculosis. Two of 14 patients died of meningitis during the first week of treatment. In the remaining 12 patients treated with isoniazid only, there was a uniform disappearance of clinical illness, regression of roentgenographic abnormalities, and a high incidence of reversal of infectiousness. A comparison of these results with those previously obtained with streptomycin permits the inference that in uncomplicated miliary tuberculosis the antituberculous activity of isoniazid in man is at least equivalent and probably slightly superior to that of streptomycin. No comparative therapeutic inferences are permissible from the small group of patients with tuberculous meningitis but the results in some cases provide additional evidence of the antituberculous activity of isoniazid.

Angiology, Baltimore

3:345-414 (Oct.) 1952

Present Status of Arteriography in Germany. H. W. Paessler.—p. 345.
*Treatment of Varicosities and Accompanying Complications (Ambulatory Treatment of Phlebitis with Compression Bandage). K. Sigg.—p. 355.
Influence of Obliteration of Subclavian Artery on Peripheral Vasoconstriction: Onset of Syndrome Resembling Raynaud's Disease and Results 30 Years After Resection of Obliterated Segment. R. Leriche. —p. 380.
Varicothrombosis. F. Martorell.—p. 384.
Acute Massive Venous Occlusion of Lower Extremities: Report of Two Cases. A. Núñez Núñez, B. Milanés, L. M. de la Vega and others. —p. 386.
Diagnosis and Treatment of Neural Complications of Peripheral Arterial Obliterative Disease. I. Mufson.—p. 392.
Effect of Alpha Tocopherol on Experimental Atherosclerosis. C. Moses, G. L. Rhodes and J. P. Levinson.—p. 397.
Effect of Hydergine (CCK-179) on Peripheral Tone and Arterial Pulsation. O. Arndal.—p. 399.
Effects of Hypersensitivity and Stress on Serum Lipoprotein. R. F. Redmond, L. J. Milch and W. W. Calhoun.—p. 408.

Treatment of Varicosities.—Sigg of Switzerland was surprised to learn that in the United States the use of sclerosing agents for the treatment of varicose veins is regarded as inferior to surgical methods. The following factors are cited as disadvantages of this method: the treatment requires much time; relapses are frequent and occur soon after treatment; and untoward local reactions, such as perivenous chemical inflammation, necrosis, embolism, and even systemic reactions, occur. Sigg feels, however, that these disadvantages can be avoided or minimized and that the sclerosing treatment gives results as good as, if not better than, those obtained by stripping and ligation. It is simple, allows the patient to be ambulatory, and is relatively inexpensive; patients will consent to treatment earlier than they would if operation and hospitalization were involved. The treatment requires more time than surgery, but the discomfort is less and does not involve loss of working days. Recurrences are less common after the use of sclerosing injections than after surgery, because the former method is more physiological. Neither method changes the constitutional tendency to varicosities. It is advisable to test the sclerosing agent by using the smallest effective dose for the first injection. If no adverse reactions occur, two or three injections can be made at future visits. Use of a less allergenic and less irritating sclerosing agent, such as sodium tetradecyl sulfate (sotradecol®) and monoethanolamine oleate ("varsyl"), injection with the leg in the horizontal position, elimination of residual trapped and unabsorbed intravenous clots by incision, and the use of compression bandages are essential in the proper technique of injecting sclerosing solutions. No patient should leave the office after receiving the injection without having the treated extremity firmly wrapped with an elastic bandage over a large sponge rubber pad to prevent local edema. Furthermore, perivenous irritation and postinjection pigmentation are eliminated by this procedure. The observations reported were made in the course of 42,000 injections of sclerosing solution.

Sigg also recommends the use of sponge rubber compression bandages in ambulatory treatment of superficial and deep phlebitis. In 463 pregnant women in whom phlebitis tended to develop, it was possible by this method to avoid thrombosis during pregnancy and after delivery in all but one case. In 926 patients with superficial and deep phlebitis who received this ambulatory treatment, none had embolism. About 2,200 leg ulcers resulting from varicosities and phlebitis were cured by this method. Other complications of varicosities and conditions following phlebitis, such as edema of the limb, elephantiasis, eczema, and cramps, can be improved by sponge rubber compression bandages.

Annals Oto., Rhin. and Laryngology, St. Louis

61:625-930 (Sept.) 1952. **Partial Index**

Method of Shaping Plastic Implant for Reconstruction of Nasal Bridge. A. C. Hilding.—p. 648.
Bronchography in Infants and Children. R. E. Priest.—p. 651.
Primary Split Thickness Skin Grafting of Radical Mastoid Cavities. B. T. Withers, J. C. Dickson and K. L. Wattleworth.—p. 656.
Endotracheal Metallic Prosthesis in Treatment of Stenosis of Upper Trachea. W. B. Harkins.—p. 663.
Effects of Cortisone on Experimental Lye Burn of Esophagus. A. Weisskopf.—p. 681.
Anatomical Considerations of Ménière's Disease. A. C. Furstenberg. —p. 692.
Obliteration of Endolymphatic Sac and Cochlear Aqueduct. J. R. Lindsay, H. F. Schuknecht, W. D. Neff and R. S. Kimura.—p. 697.
*New Theory for Correlation of Pathology and Symptomatology of Ménière's Disease: Research Study of Vestibular Endolymphatic Labyrinth. J. Lempert, D. Wolff, J. H. T. Rambo and others.—p. 717.
Essentials for Auditory Rehabilitation. F. T. Hill and E. O. Koons. —p. 751.
Problem of Hearing Defects in Children. D. E. S. Wishart.—p. 762.
Tinnitus Identification Test. V. Goodhill.—p. 778.
Ototoxicity of Streptomycin. J. E. Hawkins Jr. and M. H. Lurie.—p. 789.
Clinical Measurements and Implications of Recruitment. S. N. Reger and C. M. Kos.—p. 810.
Sound Conduction in Cochlea. E. G. Wever and M. Lawrence.—p. 824.
Abnormal Pneumatization of Temporal Bone. L. R. Boies and L. I. Younger.—p. 836.
Problem of Synkinesis and Contracture in Cases of Hemifacial Spasm and Bell's Palsy. H. L. Williams, E. H. Lambert and H. W. Woltman. —p. 850.
Developmental Anomalies of Sound Conducting Apparatus and Their Surgical Correction. G. E. Shambaugh Jr.—p. 873.
Audiometer Weber Test as Means of Determining Need for, and Type of, Masking. D. M. Markle, E. P. Fowler Jr. and H. Moulonguet.—p. 888.

New Theory of Etiology of Ménière's Disease.—In view of inconsistencies between Ménière's symptom complex and the abnormality to which these symptoms are attributed, it seemed obvious to Lempert and associates that neither endolymph hypersecretion nor poor resorption of normal endolymph secretion can be held responsible for Ménière's symptom complex. It was decided to study the vestibular membranous labyrinth removed during partial labyrinthectomy for the arrest of vertigo in Ménière's disease, in order to determine whether the vestibular labyrinth is playing a greater part in producing Ménière's symptom complex than it is being credited with. A partial labyrinthectomy was performed in six patients who had repeated severe paroxysmal attacks of Ménière's symptom complex. After summarizing the histological observations on the membranous external semicircular canals and on the cellular structure of the vestibular labyrinth, the authors present a new theory for the correlation of the pathological and symptomatologic aspects of Ménière's disease. They believe that Ménière's disease is a chronic progressive herpetic neuritis of the vestibular labyrinth of either toxic or trophic origin, and they suggest that an attack of Ménière's symptom complex is due to the rupture of one or more vesicles, with release of a toxic fluid into the lumen of the endolymphatic membranous labyrinth. The size and number of vesicles rupturing at one time determine the severity of the attacks. The paroxysmal nature of this disease is due to the continued formation and periodic rupture of these vesicles. The violent vertigo is due to the hyperexcitability of the crista by the contaminated endolymph and not to the increase in fluid pressure. The distention in the endolymphatic system is the result of excess pressure from the vesiculation and toxic fluid production. This distention is most prominent in Reissner's membrane, because this is the thinnest part of the endolymphatic system. The cumulative loss of hearing is due to progressive damage of the organ of Corti by the repeated contamination of the endolymph. Tinnitus is the result of stimulation of the organ of Corti by the contaminated endolymph. The deafness that occurs during the attack represents a toxic loss of function in the hair cells of the organ of Corti. These symptoms subside gradually because the contaminated endolymph is slowly absorbed. This explanation denies that pressure plays an important part.

Circulation, New York

6:481-640 (Oct.) 1952

*Histogenesis of Coronary Arteriosclerosis. H. D. Moon and J. F. Rinehart.—p. 481.
Comparative Evaluation of Tromexan and Dicumarol in Treatment of Thromboembolic Conditions—Based on Experience with 514 Patients: Report of Committee on Anticoagulants of American Heart Association. L. A. Scarrone, D. F. Beck and I. S. Wright.—p. 489.
Clinical Use of Anticoagulant Phenylindanedione: Report of 74 Cases. F. W. Preston, W. R. O'Connor, C. E. Thompson and E. N. Christensen.—p. 515.
Evaluation of Ability of Priscoline, Regitine, and Roniacol to Overcome Vasospasm in Normal Man; Estimation of the Probable Clinical Efficacy of These Drugs in Vasospastic Peripheral Vascular Disease. H. D. Green, W. K. Gobel, M. J. Moore and T. C. Prince.—p. 520.
Aconitine-Induced Auricular Arrhythmias and Their Relation to Circus-Movement Flutter. B. B. Brown and G. H. Acheson.—p. 529.
Clinical Significance of Postextrasystolic T-Wave Changes. H. D. Levine, B. Lown and R. B. Streeper.—p. 538.
*Clinical Characteristics of Hypertension Associated with Unilateral Renal Disease. G. A. Perera and A. W. Haelig.—p. 549.
Respiratory Variations in Blood Pressure. A. C. Dornhorst, P. Howard and G. L. Leathart.—p. 553.
Studies of Hemodynamic Changes in Humans Following Induction of Low and High Spinal Anesthesia. I. General Considerations of the Problem. Changes in Cardiac Output, Brachial Arterial Pressure, Peripheral and Pulmonary Oxygen Contents and Peripheral Blood Flows Induced by Spinal Anesthesia in Humans Not Undergoing Surgery. S. M. Sancetta, R. B. Lynn, F. A. Simeone and R. W. Scott.—p. 559.
Determination of Cardiac Output by Continuous Recording System Utilizing Iodinated (I^{131}) Human Serum Albumin. II. Clinical Studies. W. H. Pritchard, W. J. MacIntyre, W. C. Schmidt and others.—p. 572.
Studies Utilizing Portable Electromagnetic Ballistocardiograph. III. Ballistocardiogram in Bundle Branch Block. H. Mandelbaum and R. A. Mandelbaum.—p. 578.
Relationship Between Ballistocardiographic Forces and Certain Events in Cardiac Cycle. O. Tannenbaum, J. A. Schack and H. Vesell.—p. 586.
Massive Infarction of Right Ventricle and Atrium: Report of Case. E. A. Zaus and W. M. Kearns Jr.—p. 593.
Pathogenesis of Malignant Hypertension. G. W. Pickering.—p. 599.

Histogenesis of Coronary Arteriosclerosis.—The coronary arteries of 250 persons who died suddenly from traumatic or natural causes were studied. Many different pathological processes were observed to participate in the development of coronary arteriosclerosis and have an orderly sequence in their development. The earliest changes, which occurred even in infants, were the apparently simultaneous appearance of proliferation of subendothelial fibroblasts, increased amounts of mucoid ground substance, and fragmentation of the internal elastic membrane. No relationship between these changes and the occasional presence of fine droplets of lipid could be demonstrated. The moderately advanced and far advanced lesions differed from the early lesions in that lipid was always present. In these lesions there was greater fibrosis of the intima and degeneration of the internal elastic membrane. The earlier stages of fibroblastic proliferation and increased mucoid ground substance, when superimposed on the later stages, were always present on the endothelial side of the plaque. The bases and centers of intimal plaques were hyalinized, and calcification, intramural hemorrhages, and thrombosis occurred in the far advanced lesions. Fragmentation of the internal elastic membrane as a result of intra-arterial tension greater than the tensile strength of elastic tissue must be considered as a possible initiating mechanism in coronary arteriosclerosis. It is likely that the maintenance of elastic tissue and collagen by metabolic processes mediated through the intercellular ground substance are involved in the process of arteriosclerosis. Alterations in this mechanism secondary to nutritional or hormonal imbalance would produce quantitative and qualitative changes in intercellular ground substance, collagen, and elastic tissue. The possibility of "hyaline" degeneration resulting from abnormal polymerization of mucoid ground substance is suggested.

Hypertension and Unilateral Renal Disease.—A comparison has been made of 20 patients with unilateral renal disease who were apparently relieved of hypertension by nephrectomy and 20 who were believed to have had unilateral renal disease with hypertension that was not relieved following nephrectomy. All the patients in the first group had multiple readings of blood pressure above 140/90 before surgical intervention; none gave a history of antecedent hypertension of long duration. Blood pressure readings were restored to normal with at least five values less than 140/90 after discharge from the hospital and remained normotensive for a minimum follow-up period of one year. In association with the preoperative hypertension moderate to severe headaches were apparent in three-quarters of this group, four developed convulsions, and 14 of the 20 showed definite retinopathy, including hemorrhages, exudates and papilledema. A diagnosis of pyelonephritis was made in 11 patients of this group. In contrast to the patients who responded to nephrectomy by apparent cure, not one of the patients of the other group who showed persistence of elevated blood pressure readings after nephrectomy had a retinopathy. Thirteen in the second group gave a history of hypertension of more than four years' duration. Diastolic values of 130 or over were recorded in only 5 of these 20 patients. Only 7 complained of headaches. The diagnosis of pyelonephritis was made in only five patients, as opposed to a high incidence of nephrosclerosis and congenital hypoplasia. Observations made in the 20 hypertensive patients with unilateral renal disease apparently cured by nephrectomy afford strong evidence that this condition gives rise to an acute, severe, and accelerated type of hypertensive process. The presence or absence of such a pattern may be of diagnostic aid and may serve to distinguish the patients likely to respond to nephrectomy. It is suggested that the mechanisms involved in hypertension associated with unilateral kidney disease differ from those related to certain chronic bilateral renal disorders and to hypertensive vascular disease.

Delaware State Medical Journal, Wilmington

24:263-298 (Oct.) 1952

The Community and the Doctor. E. L. Stambaugh.—p. 263.
Chemicals and Health. J. H. Foulger.—p. 265.
Industry's Challenge to Medicine. R. R. Bresler.—p. 273.
Retrolental Fibroplasia. P. R. McDonald.—p. 279.
Treatment of Cancer of Cervix Uteri. J. F. Hynes.—p. 286.
Control of Edema with Electrolyte Therapy in Two Cases of Nephrosis. R. A. Neubauer.—p. 291.

Diseases of Chest, Chicago

22:369-490 (Oct.) 1952

Status of Tried Procedures in Treatment of Pulmonary Tuberculosis: As Seen in Light of 30 Years Experience. W. A. Hudson and W. B. Howes.—p. 369.
*Endobronchial Tuberculosis in Children. J. F. Daly, D. S. Brown, E. M. Lincoln and V. N. Wilking.—p. 380.
Case of Multiple Pulmonary Infarctions Occurring in Ambulant Male, and Associated with Rectal Lesions. D. J. Stone and F. J. Lovelock. —p. 399.
*Optimal Time of Expansion of Artificial Pneumothorax: Study of 445 Adequate Pneumothoraces. H. G. Trimble, J. L. Eaton and I. Gourley. —p. 407.
Studies of Respiratory Air Flow in Measurement of Ventilatory Function. D. F. Proctor.—p. 432.
Experience with Putrid Lung Abscess in Negro Patients. R. A. S. Cory. —p. 447.
Comparative Study of Susceptibility of Acid Fast Bacilli to Streptomycin, PAS, Neomycin and 4-Acetylaminobenzaldehyde Thiosemicarbazone. A. H. K. Djang, E. Bogen and D. W. Will.—p. 458.
Peridural Anesthesia, Improved Anesthesia for Thoracic Surgery from Viewpoint of Patient, Chest Surgeon and Physician. C. A. Brasher, W. W. Buckingham, O. B. Crawford and others.—p. 466.
Rise and Fall of Physical Examination in Diagnosis of Diseases of the Chest. A. E. T. Rogers and E. Bogen.—p. 478.

Endobronchial Tuberculosis in Children.—Of 434 children with various forms of tuberculosis examined during two and a half years, 43 had bronchial disease. One of these 43 patients had chronic pulmonary tuberculosis and 42 had primary tuberculosis diagnosed on roentgen ray examination by the presence of hilar and mediastinal lymphadenopathy. Only the patient with chronic pulmonary tuberculosis responded promptly to streptomycin therapy, while no definite evidence of the effectiveness of this antibiotic was obtained in the other 42 patients. The commonest symptom suggesting endobronchial disease was persistent cough, which was sometimes paroxysmal or brassy in character. Wheezing was a complaint in one-fourth of the patients. Of the 42 children, 12 had no symptoms suggesting tuberculous involvement of the bronchi. Dullness and diminished breath sounds over a localized pulmonic area were the commonest physical signs, being observed in 36 patients. A persistent wheeze was heard in 12 patients. Roentgenograms in 37 of the 42 patients showed homogeneous shadows involving lobes or segments, and those of the remaining 5 patients showed obstructive emphysema. Bronchoscopy could be done safely and repeatedly because of a new technique of anesthesia with thiamylol (surital®) sodium administered rectally in a dose of 1 gm. per 50 lb. (24.7 kg.) of body weight in a 2% solution, and preliminary local anesthesia of the tracheobronchial tree; the latter was accomplished by aerosolizing 8 cc. of 0.5 tetracaine (pontocaine®) solution containing a wetting agent. Criteria for bronchoscopy in children with primary pulmonary tuberculosis were cough, wheeze, sudden increase in roentgen-ray shadows suggesting obstruction or obstructive emphysema, or a report of persistently positive cultures from gastric washings in a child without significant findings on roentgenogram or physical examination. Repeated bronchoscopies revealed the following sequence of events in endobronchial disease associated with primary tuberculosis: (1) bronchial compression without mucosal involvement; (2) edema and inflammation; (3) ulceration and granulation. Erosion of the bronchial wall may follow, or caseous polyps and ultimately stenosis of a bronchus may develop. Bronchiectasis may be a frequent consequence of the bronchial obstruction; it has already been proved by bronchogram in 5 of the 42 patients and is suspected in 18 more.

Expansion of Artificial Pneumothorax.—In 412 patients 445 adequate pneumothoraces were established. Collapse was considered adequate when sputum was absent or was bacteriologically negative on concentration, and cavities were closed roentgenographically. Adequate collapse according to this definition does not require negative culture or guinea pig inoculation after gastric or tracheal lavage. Of the 445 adequate pneumothoraces, 386 (87%) were adequate without or before pneumonolysis, while 59 (13%) were adequate only after pneumonolysis. Although this was a selected group of favorable cases, 168 of the 445 pneumonothoraces had to be discontinued prematurely. This was due to nonexpansion of the lung in 48 of the pneumothoraces (with late reactivation in 6), reactivation of disease in 44, complications other than nonexpansion in 62, death in 7, and failure of cooperation on the part of the patient in 7. The reactivations tended to occur during the first three years of treatment, whereas the other complications tended to develop at any time during treatment. In the remaining 277 cases pneumothorax was discontinued at the discretion of the physician. Results of follow-up for periods of 6 months to 19 years seem to indicate that maintenance of collapse for three years or longer gives the best results. Pneumothorax was maintained for this length of time in 212 of the voluntarily discontinued cases, and 188 (89%) remained arrested at the latest date of follow-up. In the entire group of 277 voluntarily discontinued pneumothoraces, there were 45 reactivations of disease, all but 7 of which occurred within the first five years after pneumothorax was discontinued. The occurrence of reactivation dropped from 38% in the group treated for 12 to 23 months to 19% in the group treated for 24 to 35 months and to 12% or less in cases in which pneumothorax was maintained for three years or longer. Reactivations during pneumothorax tended to occur on the untreated side, but reactivation after voluntary discontinuance of pneumothorax occurred about equally on the side of collapse and on the opposite side. There were 35 deaths (8%) in the 445 patients with adequate pneumothoraces at the time of the latest follow-up; of the 35 deaths, 2 occurred in patients with minimal disease, 14 in those with moderately advanced disease, 12 in those with far advanced disease, and 7 in those with simultaneous bilateral pneumothoraces.

Endocrinology, Springfield, Ill.

51:75-156 (Aug.) 1952. **Partial Index**

Urinary Phosphate Excretion Factor of Parathyroid Gland Extracts: Hormone or Artefact? G. S. Stewart and H. F. Bowen.—p. 80.
Effects of Vitamin A and Reichstein's Compound L on Thyroid, Adrenal and Lymphoid Systems of Rat. W. L. Money, J. Fager, V. Lucas and R. W. Rawson.—p. 87.
Influence of Different Dietary Protein Levels in Starvation on Endocrine System of Male and Female Rats. J. Rivero-Fontan, K. E. Paschkis, E. West and A. Cantarow.—p. 100.
Effect of Cortisone Treatment for 28 Days on Radio-Iodine Metabolism in Normal Rats and Adrenalectomized Rats Maintained with Desoxycorticosterone. C. J. Migeon, L. I. Gardner, J. F. Crigler Jr. and L. Wilkins.—p. 117.
Nutritional Fractions Affecting Survival in Young Adrenalectomized Rats. E. P. Ralli and M. E. Dumm.—p. 135.
Effect of Various Hormones Upon Hepatic Synthesis of Cholesterol in Rats. R. H. Rosenman, M. Friedman and S. O. Byers.—p. 142.

Iowa State Medical Society Journal, Des Moines

42:477-518 (Oct.) 1952

Shall I Call an Orthopedist? F. Matchett.—p. 477.
Aseptic Necrosis of Epiphyses. G. W. Bennett.—p. 481.
Shoulder Syndrome. F. G. Ober.—p. 483.
*Thromboangiitis Obliterans: Results of Sympathectomy. L. T. Palumbo.—p. 486.
Clinical Investigation of Tablet Neohydrin, New Oral Mercurial Diuretic. G. H. Finch.—p. 490.

Sympathectomy for Thromboangiitis Obliterans.—Palumbo describes experiences with sympathectomy in 31 patients with thromboangiitis obliterans who were treated at a Veterans Administration hospital. Intermittent claudication was the initial symptom in the majority of patients. Many had cold clammy toes, feet, legs, and/or hands; several had a history of recurrent attacks of localized acute thrombophlebitis; all were males from 20 to 60 years of age, and none were of the Jewish race. The majority had symptoms for over three years. In 90% of the patients the lower extremities were involved. Both upper and lower extremities were involved in the remaining 10%. All of the patients smoked at least one package of cigarets per day, and 30% smoked two packages daily. Twenty bilateral and 11 unilateral lumbar sympathectomies and one unilateral and one bilateral dorsal sympathectomy were done. The severe aching and burning pain in feet and legs was relieved immediately. Pain was relieved in the patients who had associated gangrene or ulceration of the foot. In five of six patients who had infection and ulceration rapid healing took place. A four year follow-up study indicated that a sympathetic denervation in early cases may prevent or delay the need for a major amputation, which, when it becomes necessary, can be performed below the knee in the majority of cases.

Journal of Applied Physiology, Washington, D. C.

5:51-98 (Aug.) 1952

Growth Responses of School Child to Changes in Diet and Environmental Factors. P. E. Howe and M. Schiller.—p. 51.
Osmotic Diuresis as Measurement of Renal Function in Man. W. A. Brodsky, S. Rapoport, H. N. Graubarth and A. H. Levkoff.—p. 62
Estimation of Lean Body Mass and Body Fat From Basal Oxygen Consumption and Creatinine Excretion. A. T. Miller Jr. and C. S. Blyth.—p. 73.
*Lifespan of Leukocytes in Man. D. L. Kline and E. E. Cliffton.—p. 79.
Physical Methods Simulating Mechanisms of Human Cough. A. L. Barach, G. J. Beck, H. A. Bickerman and H. E. Seanor.—p. 85.
Id.: Elimination of Radiopaque Material from Bronchi of Dogs. H. A. Bickerman, G. J. Beck, C. Gordon and A. L. Barach.—p. 92.

Life Span of Leukocytes in Man.—Measurements of the life span of the white blood cells in man and animals, as reported in the literature, show a marked disparity, ranging from less than an hour to three weeks. This great variation can be explained only on the basis of the methods used in determining the life span. The method employed in this study involved the incorporation of radioactive phosphorus (P^{32}) into the desoxypentose nucleic acid (DNA) of the leukocytes at the time of their formation in the bone marrow and the measurement at frequent intervals thereafter of the radioactivity of the desoxypentose nucleic acid obtained from circulating leukocytes. Presumably the duration of significant radioactivity in the circulating leukocytes is a measure of the life span of the leukocytes formed at the time of administration of the P^{32}. This technique was employed in seven subjects without hematological disease. From the data obtained it was estimated that the life span of the average leukocyte is 13.2 days. The time the cells actually circulate in the blood stream is estimated to be 9.2 days.

Journal of Bacteriology, Baltimore

64:435-596 (Oct.) 1952. **Partial Index**

Formation of Arginine Dihydrolase by Streptococci and Some Properties of the Enzyme System. H. D. Slade and W. C. Slamp.—p. 455.
*Potential Infectious Hazards of Common Bacteriological Techniques. R. E. Anderson, L. Stein, M. L. Moss and N. H. Gross.—p. 473.
Genetic Studies on Microbial Cross Resistance to Toxic Agents. I. Cross Resistance of Escherichia Coli to 15 Antibiotics. W. Szybalski and V. Bryson.—p. 489.
Effect of Nutrition on Growth and Metabolism of Bacillus Subtilis. N. D. Gary and R. C. Bard.—p. 501.
Catalase Activity in Escherichia Coli. J. B. Clark.—p. 527.
Comparison Between PR8 Influenza Virus Receptor Areas on Fowl and Sheep Erythrocytes. L. B. Fastier.—p. 547.
Nonhereditary, Host-Induced Variation of Bacterial Viruses. S. E. Luria and M. L. Human.—p. 557.
Effect of Certain Amino Acid Deficiencies on Lansing Poliomyelitis in Mice. W. L. Davies, W. L. Pond, S. C. Smith and others.—p. 571.

Infectious Hazards of Bacteriological Techniques.—The escape of living organisms during standard bacteriological procedures was studied, and it was found that the most hazardous laboratory procedures seem to be those in which splashing or bubbling of contaminated mediums occurs. When the bubbles burst, they release into the air bacteria-laden aerosols of particles small enough to remain suspended for some time. The hazard involved in opening shaken dilution bottles is partially reduced by use of Erlenmeyer flasks and by rotating them instead of shaking them up and down. The Waring blender creates an aerosol laden with bacteria. Substances like embryonic material containing egg albumin form foams that may persist for several hours, and since, with the present design of the Waring blender, it seems impossible to prevent leaks, the blender should be used in a ventilated bacteriological cabinet in which the outside of the blender can be decontaminated before removal from the cabinet. If a drop of culture medium falls during pipetting on a hard, nonabsorbent, surface, aerosols are formed. Many workers use a towel for a working surface, believing that its absorbent quality will prevent splattering of falling drops; however, air sampling revealed unexpectedly large amounts of aerosol when a dry hand towel was used for this purpose. The practice of removing wet plugs from culture tubes should be avoided. The use of compartmented baskets will aid in preventing tubes from tipping and wetting the plugs. The opening of centrifuged tubes involves hazards; there is foaming and the plugs become moistened. This can be minimized by filling the tubes only half full. It is best to open all liquid cultures in a ventilated cabinet. Much of the aerosol released during the removal of an inoculum from a vaccine bottle can be prevented by use of an alcohol-soaked cotton pledget around the hypodermic needle. The number of organisms liberated into the air during transfer of cultures with a loop can be reduced by making sure that the loop is cool before inserting it into the culture, by not shaking the flask, and by not stirring the culture with the loop.

Journal of Infectious Diseases, Chicago

91:105-206 (Sept.-Oct.) 1952. **Partial Index**

Localization of X-Ray Injury to Initial Phases of Antibody Response. W. H. Taliaferro, L. G. Taliaferro and E. F. Janssen.—p. 105.
Nucleic Acids in Plasmodia and Phosphorus Partition of Cells Infected with Plasmodium Gallinaceum. R. M. Lewert.—p. 125.
Studies of Dengue Fever Virus in Cave Bat (Myotus Lucifugus). R. L. Reagan and A. L. Brueckner.—p. 145.
Serological Diagnosis of Influenza: Antibody Levels in Relation to Concentration of Virus Used in Hemagglutination Inhibition Test. R. L. Woolridge and Y. E. Crawford.—p. 159.
Interference Between St. Louis Encephalitis Virus and Western Equine Encephalomyelitis Virus Along Neuronal Pathway. R. T. Jordan and C. E. Duffy.—p. 165.
Inhibition of Complement Fixation by Certain Serums when Tested Against Psittacosis and Lympho-Granuloma Venereum Antigens. N. Schmidt, H. B. Harding, O. E. Hepler and E. Murmann.—p. 174.
Role of Stomach Wall in Exogenous Development of Plasmodium Gallinaceum as Studied by Means of Haemocoel Injections of Susceptible and Refractory Mosquitoes. A. Burns Weathersby.—p. 198.

Journal of Investigative Dermatology, Baltimore

19:249-306 (Oct.) 1952

Dermatology Among the Specialties: Plan to Achieve its Deserved Status. S. M. Peck.—p. 259.
Localized Chromidrosis: Disorder of Apocrine Gland. W. B. Shelley and H. J. Hurley Jr.—p. 265.
Failure of Local Inhibitory Action on Local Injection of Free Alcohol of Compound F (Hydrocortisone) in Some Dermatologic Lesions. L. Goldman, H. O'Hara, E. Emura and J. Baskett.—p. 267.
Tinea Capitis Treated with Thiolutin. A. G. Franks.—p. 269.
Some Immunologic Phenomena in Treatment of and Patch Testing for Ragweed Oil Dermatitis. A. A. Fisher.—p. 271.
Experimental Simulation of L.E. Phenomenon. H. Silver and A. Kuna. —p. 281.
*Experimental Studies on Pityrosporum Ovale: Its Pathogenicity and Antigenic Capacity. G. L. Rocha, C. Silva, A. O. Lima and M. Goto. —p. 289.
Experiments on Passive Transfer of Eczematous Allergy. H. Haxthausen. —p. 293.
Comparative Effects of Aminopterin, Cortisone and ACTH in Experimental Formaldehyde Arthritis and Psoriatic Arthritis. R. Gubner, L. Cote, J. Hughes and others.—p. 297.

Pathogenicity and Antigenic Capacity of Pityrosporum Ovale.—According to Rocha and associates, Pityrosporum ovale, also known as spore of Malassez, or bottle bacillus of Unna, is almost always associated with the dry or greasy scales of seborrhea capitis or dandruff, but can also be found on the great majority of apparently normal scalps. Several studies have been made on the possible pathogenic and antigenic role of this organism, but because there appears to be no accord in the opinions of the various investigators the authors decided to make new experiments with the Pityrosporum ovale Brumpt, strain 2586 of the Oswaldo Cruz Institute, Rio de Janeiro, Brazil. Fifty adults, most of whom had dandruff and some seborrheic dermatitis, were inoculated with living P. ovale. Twenty received applications of a paste containing equal parts of anhydrous lanolin and a heavy suspension of living P. ovale over small areas of intact and scarified skin. No reaction was noted in any of these persons during the next 30 days. Thirty subjects received intradermal injections of 0.1 cc. of a saline suspension of living P. ovale having a turbidity corresponding to tube 4 in the McFarland scale. Transitory localized erythema and edema appeared in the majority of subjects within 48 hours, persisted for two days, and disappeared without scaling or necrosis. In 200 persons skin tests were performed with an antigen, pityrosporin, obtained from the filtrate of a dextrose-oleic acid broth culture of P. ovale; 0.1 cc. of this extract diluted 1:10 and 1:100, and 0.02 cc. diluted 1:500 were injected intradermally into the arm. No reactions due to the antigen were obtained. Similarly, there was no reaction from the injection of 0.1 cc. of a dead suspension of the organism in 20 persons. These results support the contention of many dermatologists that P. ovale is neither pathogenic for man nor capable of inducing specific cutaneous hypersensitivity.

Journal Lab. and Clinical Medicine, St. Louis

40:489-656 (Oct.) 1952

Cold Precipitable Serum Globulins ("Cold Fractions," "Cryoglobulins") in Subacute Bacterial Endocarditis. F. Dreyfuss and G. Librach.—p. 489.
Effect of "Thrombocytopenic Factor" of Idiopathic Thrombocytopenic Purpura on Platelet Levels as Measured by Direct and Indirect Methods. S. J. Wilson, G. Eisemann and J. H. Chance.—p. 498.
Bone Marrow in Idiopathic Thrombocytopenic Purpura: Analysis of 100 Cases with Reference to Prognostic Significance of Eosinophils and Megakaryocytes. S. J. Presley, W. R. Best and L. R. Limarzi.—p. 503.
Variations in Nucleotidase Activity of Leukocytes. Studies with Leukemia Patients. M. E. Swendseid, P. D. Wright and F. H. Bethell.—p. 515.
Renal Function in Multiple Myeloma. R. Goldman, W. S. Adams and E. B. Luchsinger.—p. 519.
Abnormalities in Excretion of Water and Sodium in "Compensated" Cirrhosis of the Liver. S. Papper and J. D. Rosenbaum.—p. 523.
Bromsulfalein Clearance: Quantitative Clinical Test for Liver Function. R. D. Goodman.—p. 531.
Portal Circulation Time in Cirrhosis of the Liver Following Portacaval Anastomosis. B. Giges and P. E. Teschan.—p. 537.
Metabolism of Iron. II. Intravenous Iron Tolerance Tests in Laennec's Cirrhosis. S. E. Gitlow, M. R. Beyers and J. P. Colmore.—p. 541.
Disturbance of Vitamin B_6 Metabolism in Pregnancy. M. Wachstein and A. Gudaitis.—p. 550.
Bronchospirometry. V. Differential Residual Volume Determination. E. A. Gaensler and D. W. Cugell.—p. 558.
Ultrasonic Visualization of Soft Tissue Structures of the Body. D. H. Howry and W. R. Bliss.—p. 579.
Correlation of Rapid Slide-Agglutination Test (Castaneda) with Tube-Agglutination Test in Screening Suspected Cases of Human Brucellosis. W. W. Spink and D. Anderson.—p. 593.

Journal of Urology, Baltimore

68:667-778 (Oct.) 1952. **Partial Index**

*Renal Infarction. W. C. Meyer and A. L. Ahnfeldt.—p. 667.
Aplastic Kidney with Ectopic Ureteral Orifice in Prostatic Urethra. L. F. Huffman.—p. 673.
Retrocaval Ureter: Case Report and New Diagnostic Approach. P. R. Leberman, H. H. Zinsser and D. F. Milam.—p. 679.
Congenital Ureteral Valve: Its Role as Primary Obstructive Lesion: Classification of Literature and Report of Authentic Case. B. Wall and H. E. Wachter.—p. 684.
Vesico-Ureteral Reflux in Paraplegic Patients. E. Bors and A. E. Comarr. —p. 691.
Bladder Diverticulum in Female. F. L. Senger, J. J. Bottone and S. H. Rothfeld.—p. 699.
Vesical Neoplasm Prolapsing Through Urethra and Suggesting Primary Vaginal Carcinoma. N. B. Davis, J. H. Pratt and L. F. Greene.—p. 703.
*Segmental Resection and Radium Implantation in Treatment of Carcinoma of Urinary Bladder. M. M. Kligerman, J. N. Robinson, G. W. Fish and I. David.—p. 706.
Relation of Preoperative Estimate to Pathologic Demonstration of Extent of Vesical Neoplasms. V. F. Marshall.—p. 714.
Analysis of Results of Prostatic Surgery in 866 Cases. G. Bulkley and J. W. Kearns.—p. 724.
Progress in Suprapubic Prostatectomy. J. C. Birdsall, G. C. Poore, H. M. Burros and D. S. Liang.—p. 729.
Evaluation of Current Treatment of Prostatic Cancer. H. Brendler. —p. 734.
Failure of Fusion of Testis and Epididymis. A. L. Dean Jr., J. W. Major and E. J. Ottenheimer.—p. 754.
Accessory Spleen in Scrotum: Report of Two Cases. L. W. Keizur. —p. 759.
Intra-Urothelial Cancer: Carcinoma in Situ, Bowen's Disease of Urinary System: Discussion of Thirty Cases. M. M. Melicow and J. W. Hollowell.—p. 763.
Urinary Retention Due to Banthine. J. I. Waller.—p. 773.
Influence of Small Doses of Stilbestrol on Oligospermia. R. D. Herrold. —p. 775.

Renal Infarction.—Renal infarction may be of arterial, venous, or traumatic origin. The commonest type is that secondary to arterial occlusion from emboli stemming from a cardiac lesion. Such infarctions are usually sterile, and the prognosis is usually favorable, depending on the amount of kidney tissue destroyed and the state of the remaining functioning tissue. Arterial infarctions are also seen following cholecystectomy, appendectomy, hysterectomy, and hernia repair; however, such cases are rare compared with those associated with cardiac disease. Venous obstructions with secondary renal infarction are less frequent than those of arterial origin, but whereas the arterial infarction is usually aseptic and self-limiting, the venous infarction is usually septic and often bilateral. The kidney is usually enlarged and palpable, and gross hematuria is frequent. It occurs in septic states and in occlusion of the major venous channels; it is preterminal or followed by azotemia, uremia, and death. The third and rarest cause of renal infarction is trauma. Only six such cases have been reported previously and a seventh is described. The diagnosis of traumatic infarction can be made from a history of trauma with associated hematuria and unilateral failure of kidney function. In previous cases a renal exploration was done with subsequent nephrectomy. In the present case the trauma was inflicted primarily on the contralateral side. Nephrectomy revealed total infarction of the kidney secondary to occlusion of the renal artery, presumably due to trauma. In such cases of unilateral anuria of prerenal origin the possibility of periarteritis nodosa involving the renal artery and thromboangiitis obliterans must be considered; however, with a history of trauma with associated hematuria, ischemic renal infarction secondary to occlusion of the renal artery is the most likely diagnosis. Renal exploration is indicated in order to substantiate the diagnosis and to institute the surgical treatment that will conserve all functioning renal tissue.

Segmental Resection and Radium Implantation in Carcinoma of Bladder.—Of 347 patients with carcinoma of the bladder, 198 were treated with radium and 149 were treated by segmental resection. These cases were analyzed to ascertain which of the two methods provides the longest interval free of disease, and to discover the indications for the one or the other of these two methods. In the early cases the choice of the method was often based on whether the lesion was in a resectable area. Radium was used in the more inaccessible and more invasive types of tumors. Treatment in the 347 cases was classified as palliative or definitive on the basis of the gross pathology observed at the time of operation. Segmental resection was classed

as palliative in 46 cases and definitive in 103. Radium implantation was classed as palliative in 91 cases and definitive in 107. Only 94 patients in the first group and 63 in the second had been followed for five years at the time of evaluation and so could be included in the survey. A higher percentage of patients with carcinoma of the bladder were free of disease at any given time following radium implantation than a similar group treated by segmental resection. Therefore, radium implantation is recommended as the initial treatment in patients with grade 2 or more malignant polypoid lesions and in submucosal nodular and sessile lesions. The treatment of carcinoma of the bladder is a combined undertaking in which urologist and radiologist cooperate, each administering various techniques of treatment in the course of the disease as indicated in the individual patient. The cumulative survival rate by years is a better expression of the ability to arrest cancer than the five year survival rate commonly used. Comparison of the cumulative survival rate in these 347 treated cases with that of untreated cases reveals that treatment of cancer of the bladder appreciably prolongs life.

Nebraska State Medical Journal, Lincoln

37:309-342 (Oct.) 1952

CANCER—PANEL DISCUSSION

Pathology of Cancer. F. H. Tanner.—p. 311.
Carcinoma of the Lung. G. W. Covey.—p. 312.
Carcinoma of the Lip. J. M. Neely.—p. 313.
Cancer in Field of General Surgery. R. S. Whitham.—p. 313.
Otolaryngologic Aspects of Cancer. T. Smith.—p. 315.
Pelvic Cancer. M. E. Grier.—p. 317.
Principles of Radiotherapy in Cancer. H. B. Hunt.—p. 318.
Malignant Peripheral Nerve Tumors. J. M. Neely.—p. 323.
New Policy on Management of Indigent Venereal Disease Patients. L. W. Lee.—p. 329.

New Orleans Medical and Surgical Journal

104:651-692 (Oct.) 1952

SYMPOSIUM: DIABETES MELLITUS

Statistics from Our Lady of the Lake Sanitarium, Baton Rouge, Louisiana. J. P. Tomsula.—p. 651.
Pathogenesis of Diabetes. A. L. McQuown.—p. 652.
Diabetes Mellitus; Ophthalmological Aspects. P. L. Marks.—p. 654.
Diabetic Coma. F. A. De Jean.—p. 656.
Diabetics in Pregnancy. A. F. St. Amant.—p. 660.
Diabetes in Childhood. J. A. Avant Jr.—p. 662.
Surgery in Diabetes. G. Azar.—p. 665.
Some Medical Complications of Diabetic Acidosis. W. M. Luikart.—p. 667.
Treatment of Fractures of the Hip. C. R. Reed Jr. and T. M. Oxford.—p. 670.
Toxic Reaction from Gold Appearing During ACTH Administration: Report of Case. J. M. McMahon.—p. 674.
Care of Infantile Eczema. A. V. Stoesser.—p. 677.

New York State Journal of Medicine, New York

52:2175-2318 (Sept. 15) 1952

Acute Pancreatitis: Antithrombin Titer as Aid in Diagnosis and Prognosis. I. Innerfield.—p. 2239.
Anemias of Blood Loss and Iron Deficiency Associated with Gastrointestinal Disease. E. W. Edwards.—p. 2244.
Tumors of the Small Bowel. W. A. Gunkler.—p. 2247.
Psychosomatic Investigation and Management of Gastrointestinal Disorders. G. C. Ham.—p. 2250.
Psychologic Aspects of Management of Patients with Ulcerative Colitis. G. L. Engel.—p. 2255.
Management of Massive Hemorrhage from Gastroduodenal Ulceration. W. F. Lipp, E. Milch and A. H. Aaron.—p. 2261.
Medical Management of Chronic Ulcerative Colitis. C. A. Flood and M. J. Lepore.—p. 2265.
Medical Management of Thyroid Disorders. M. Clinton.—p. 2270.
Circulatory Diseases of Extremities. A. W. Duryee.—p. 2275.
Treatment of Cardiac Emergencies. C. F. de la Chapelle.—p. 2278.
Limitations in Use of ACTH and Cortisone. B. J. Duffy Jr.—p. 2281.

Oklahoma State Medical Assn. J., Oklahoma City

45:311-342 (Sept.) 1952

Billroth I Gastrectomy. L. S. Fallis and J. Barron.—p. 313.
The Prostate—A Resume of Practical Problems in Treatment and Management. A. R. Sugg.—p. 316.
Medical Ethics. L. C. McHenry.—p. 321.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

60:377-428 (Aug.) 1952

Technic of Posterior Colpotomy. W. C. Bradbury.—p. 377.
*Window Laryngofissure Operation for Small Malignant Growths of Vocal Cord. E. N. Broyles.—p. 387.
Clinical Review of Carcinoma of Vulva. J. W. Newell and D. G. McKay.—p. 388.
Placenta Accreta: Report of Two Cases. D. W. deCarle.—p. 393.
Further Observations on Resection of Auricular Appendages. J. M. Beal and W. P. Longmire Jr.—p. 400.
Refracture of Patella Following Partial Patellectomy. C. A. Rowe.—p. 404.
Delivery of Persistent Transverse Vertex Utilizing Barton Forceps. G. Ahnquist.—p. 406.
Interesting Fetal Abortive: Illustrated Case Report. J. O. McCall.—p. 425.

60:429-484 (Sept.) 1952

Effect of ACTH and Cortisone on Rh$_0$ Antibody Titer During Pregnancy. R. C. Christensen, R. R. Margulis and H. L. Stewart, Jr.—p. 429.
Bizarre Behavior of Thyroid Cancer. J. A. Duncan, S. T. Cantril and P. K. Lund.—p. 435.
Delivery of Persistent Transverse Vertex Utilizing Barton Forceps. G. Ahnquist.—p. 448.
Frigidity in Women. R. J. Lowrie.—p. 458.
Use of Sulfhydryl Solution in Treatment of Burns of Eye. A. E. Cruthirds.—p. 463.
Critical Consideration of Surgical Biopsy of Breast. S. F. Herrmann and C. Reberger.—p. 468.
Actinomycosis of Female Genitalia: Case Report and Review of Literature. E. G. Ingalls and K. A. Merendino.—p. 476.

60:485-532 (Oct.) 1952

Standards of Precaution Against Leaving Sponges and Instruments in Surgical Wounds, Presidential Address: A. R. Kilgore.—p. 485.
Newer Concept of Megacolon. E. G. Clausen.—p. 488.
Therapeutic Abortions in California in 1950. K. P. Russell.—p. 497.
Indications for Pancreaticoduodenectomy. C. Mathewson Jr.—p. 503.
Gastric Ulcer: Problem of Benign or Malignant Lesion. C. E. Stafford and H. C. Prout.—p. 510.
Portacaval Anastomosis in Treatment of Cirrhosis of the Liver. F. E. Stock.—p. 514.
Malignant Melanomas and Pigmented Nevi: Report of Six Cases. M. E. Conway.—p. 517.
Sexual Functions of Pubococcygeus Muscle. A. H. Kegel.—p. 521.

Window Laryngofissure Operation for Small Growths of Vocal Cord.—Broyles describes the technique of a window operation for the removal of small malignant growths of the vocal cords. This technique does away with the troublesome handling of cartilage and changes it to a soft tissue operation. The larynx is entered on the unaffected side to avoid cutting into the malignant tissue. Although most of the thyroid cartilage is removed, good breathing space remains due to the pull of the extralaryngeal muscles, the hyoid bone, and the cricoid cartilage. It provides a dry field for inspection of the interior of the larynx and removal of early growths. If there is fixation of a vocal cord or an arytenoid, or evidence that the growth extends to the cricothyroid membrane, a more extensive operation is necessary. The surgeon should always be ready to perform a laryngectomy if he finds, as is frequently the case, that the growth is larger than anticipated. This window exposure gives the surgeon an opportunity for the inspection and palpation of the interior of the larynx before completing the removal of the growth. The author so far has performed this window operation on 24 patients. The time elapsed has been short, but to date there has been only one recurrence, for which laryngectomy was done. Careful selection of the patient is of utmost importance.

Wisconsin Medical Journal, Madison

51:763-838 (Aug.) 1952

Epidermolysis Bullosa Hereditaria in Newborn: Report of Two Cases. M. S. Kagen, L. Williams, W. Giffin and R. Wiley.—p. 766.
The 1951 Epidemic of Poliomyelitis in the City of Milwaukee. M. J. Fox.—p. 768.
Paget's Disease of Bone (Osteitis Deformans): Report of Case Treated with Cortisone. V. S. Falk Jr.—p. 772.
Mental Examination in Military Induction. J. E. Weber.—p. 776.

51:842-964 (Sept.) 1952

Cancer of Stomach 33 Years After Gastroenterostomy for Bleeding Duodenal Ulcer. F. G. H. Maloney and O. A. Stiennon.—p. 862.
Antibiotic Therapy. G. C. Owen.—p. 866.
Congenital Dislocation of Hip—New Concepts in Early Diagnosis and Treatment in Infancy. B. J. Brewer.—p. 869.
Treatment of Migraine and Migraine-Like Headaches with EC 112 Suppositories. M. C. F. Lindert.—p. 874.

FOREIGN

Acta Neurovegetativa, Vienna

4:343-566 (Nos. 4 & 5) 1952. **Partial Index**

Nerve Terminations in External Eye Muscles. J. R. Wolter.—p. 343.
Comparative Cytological Studies on Problem of Neurosecretion in Hypothalamus. H. G. Goslar.—p. 381.
Renal Changes in Acute Hepatitis and in Portal Cirrhosis. M. Arsénio Nunes.—p. 425.
Brain Concussion as a Problem in Pathogenesis and in Forensic Medicine. W. Birkmayer.—p. 453.
*Stellate Ganglion Block in Angina Pectoris. F. Klausgraber.—p. 470.
Sympathetic Nervous System and Phosphorus Content of Serum. A. Lützenkirchen.—p. 482.
Functional Disturbances of Internal Organs in Diseases of Thoracic Portion of Spine. F.-W. Kroll and E. Reiss.—p. 515.
Allergy and Pancreatitis. G. Eichelter.—p. 543.

Stellate Ganglion Block in Angina Pectoris.—Klausgraber reports observations on 132 patients with angina pectoris, who were given a total of 600 procaine hydrochloride infiltrations of the stellate ganglion in the course of the last two years. He recommends Herget's technique of infiltration as the least dangerous. Stellate ganglion block by means of procaine hydrochloride is the method of choice in the treatment of angina pectoris. This treatment is not suitable for persons with cardiac decompensation or with an unstable sympathetic nervous system. The infiltration should never be done bilaterally at one session, and it should be done only in a hospital and by a physician who is thoroughly familiar with this method. With these restrictions, however, it may be used to relieve pain in patients, at least temporarily, when other means have failed.

Annales Medicinae Internae Fenniae, Helsinki

41:157-234 (No. 3) 1952. **Partial Index**

Effect of Several Antihistamine Preparations on Production of Hydrochloric Acid. M. Hirvonen.—p. 157.
*Sudden Death During Cortisone Therapy of Bronchial Asthma: Report of Two Cases. K. A. J. Järvinen.—p. 165.
Segmentary Localization of Pulmonary Tuberculosis. H. Laitinen and K. Kivikanervo.—p. 186.
*Chronic Cardiac Aneurysm. H. Laitinen and K. Thomander.—p. 202.

Death During Cortisone Therapy of Bronchial Asthma.—A 53-year-old woman and a 39-year-old man with bronchial asthma treated with cortisone died suddenly. The woman had been given a total dose of 400 mg. of the drug within four days. The man received a total dose of 550 mg. in six days; after an interval of five days a new course of cortisone was started, and this time the patient was given 75 mg. of cortisone. A clinical diagnosis of bronchial asthma, pulmonary emphysema, and cor pulmonale was confirmed in both patients by necropsy, which also revealed signs of acute congestion of the gastrointestinal tract in both cases. Pronounced changes of the adrenals in the woman consisted of a disintegrating medulla, thin cortex, and vacuolization of the cells of the cortex, as well as proliferation in the immediate vicinity of the capsule. Treatment with cortisone had been given only for a short time and in relatively small doses. Roundness of the face, striae on the upper parts of thighs and the abdomen, and hirsutism were not observed in the author's patients, in contrast to the observations by other workers in patients to whom large doses of cortisone had been given. Despite the absence of signs of undesirable effects of cortisone therapy in the two fatal cases, the possibility cannot be excluded that the drug played a part in the fatal outcome. The large amount of mucus observed in the bronchi of the male patient is a typical postmortem finding in fatal bronchial asthma. There were no obstructing plugs of bronchial mucus in the other patient, but deaths of this type from bronchial asthma have also been reported. Acute peripheral circulating insufficiency was indicated by necropsy findings in the author's two patients and in two additional patients, one with rheumatoid arthritis and the other with bronchial asthma, who had been treated with cortisone at the same hospital. The regulation of the vascular tonus is closely connected with the function of the adrenals Since even routine doses of cortisone may produce great changes in the adrenals, it might be presumed that the vascular insufficiency in the patients reported on arose in this way. The considerable changes in the adrenals of one of the author's patients support this concept. Great caution is indicated if cortisone is given to an asthmatic patient with pulmonary emphysema and cor pulmonale.

Chronic Cardiac Aneurysm.—A large aneurysm with mural calcification in the apical portion of the left ventricle of the heart was demonstrated on roentgenologic examination in two men, aged 70 and 53, and a woman, aged 70, all of whom had had cardiac infarction. Two of the patients lived six to nine years after the formation of the aneurysm and had comparatively mild cardiac disturbance, with nearly unimpaired work capacity. The younger man is still alive 11 years after the onset of cardiac infarction and holds a job entailing considerable responsibility. One of the two other patients died of a malignant tumor of the colon and the other of acute coronary thrombosis. Necropsy showed that in neither case was death caused by the cardiac aneurysm or its sequelae. In both cases the aneurysm involved the descending branch of the left coronary artery, but the pathological changes were not limited to this branch and pronounced sclerosis was present in all branches of the coronary arteries. The wall of the aneurysm was composed of structureless scar tissue of cartilaginous consistency and a thickened pericardium, which in some areas seemed to be the strongest part of the wall. The pericardium thus played an important part in the prevention of cardiac rupture and in the formation of the aneurysm. The thickened pericardium protected the wall of the heart at the most critical stage of myocardial necrosis, i. e., when the necrotic myocardium has the least resistance and the cicatricial tissue has not yet formed. The authors' cases suggest that if the patient does not die of the immediate consequences of cardiac infarction or if the wall of the heart is not perforated soon after the formation of the aneurysm, the resulting extensive myocardial deterioration and the aneurysm do not exert any notable effect on cardiac function.

Brain, London

75:273-432 (Sept.) 1952. **Partial Index**

Some Aspects of Cortical Function. P. Cloake.—p. 273.
Intellectual Impairment with Localized Cerebral Lesions. J. McFie and M. F. Piercy.—p. 292.
Effects of Right-Sided Occipito-Parietal Brain Injury in Left-Handed Man. M. E. Humphrey and O. L. Zangwill.—p. 312.
Origin of Sensations of Heat and Cold. J. M. O.Connor and B. P. McCarthy.—p. 324.
Cerebral Lipidosis: Electroencephalographic Study. W. Cobb, F. Martin and Giuseppe Pampiglione.—p. 343.
Facial Reflexes. E. Kugelberg.—p. 385.
Acalculia. F. Grewel.—p. 397.
Peculiar Form of Peripheral Neuropathy: Familial Atypical Generalized Amyloidosis with Special Involvement of Peripheral Nerves. C. Andrade.—p. 408.

British Journal of Urology, Edinburgh

24:177-256 (Sept.) 1952. **Partial Index**

Streptomycin Serum Levels in Treatment of Renal Tuberculosis. J. C. Dick and J. S. Stevenson.—p. 179.
Some Observations on Treatment of Calcifying Renal Tuberculosis. H. G. Hanley.—p. 188.
Solitary Ectopic Pelvic Kidney. J. C. Anderson and A. S. C. Robertson.—p. 207.
Cholesteatoma of Epididymis. T. E. Gibson.—p. 209.
Hypernephroma: Secondary Deposits Removed by Operation. T. L. Schofield.—p. 211.
*Post-Operative Osteitis Pubis: Causes and Treatment. J. Cibert.—p. 213.
Artificial Bladder: Review. S. Glaser.—p. 216.
Subtotal Cystectomy for Atonic Bladder. H. C. E. M. Houtappel.—p. 222.
Delayed Traumatic Stricture of Anterior Urethra. O. Daniel.—p. 225.
Reconstruction of Urethra in Male. J. Swinney.—p. 229.
Treatment of Chronic Urinary Retention in Women by Transurethral Resection of Bladder Neck. W. G. Q. Mills.—p. 236.
Carcinoma of Bladder Associated with Metaplasia. C. E. Dukes.—p. 238.

Postoperative Osteitis Pubis.—Since the introduction of retropubic prostatectomy by Millin, the incidenee of osteitis pubis appears to have increased. It is rarely a true osteitis, but usually an osteoporosis with alteration of symphyseal cartilage. Various authors attribute it to an infection of the prevesical space (septic spill of urine), to trauma (traction on the recti muscles, electro-

coagulation of bone during hemostasis, or pricking of bone by the needle), to vascular obliteration, or to damage to nerve tissue. Cibert shows by means of a case report that it is possible to interrupt the course of this condition. In most cases the cause appears to be due to the presence of a septic focus in contact with the symphysis, usually behind it, but sometimes in front of it. It is possible to reduce the frequency of osteitis by increasing the duration of postoperative drainage and by avoiding too early closure of the superficial planes. The complication may be rapidly cured by reopening of the space of Retzius, resection of infected tissue, and drainage. The failures that have been observed appear to be due to the fact that a residual septic focus was not found or that intervention had been delayed too long. The frequency of osteitis pubis after retropubic prostatectomy is not great (1.5% in 1,000 cases), and its importance is slight if further intervention is carried out promptly. It must not be considered a contraindication to retropubic prostatectomy.

British Medical Journal, London

2:679-734 (Sept. 27) 1952

Bacteriophage-Typing and Epidemiological Problems. J. S. K. Boyd. —p. 679.
Safety-Belts Are Not Dangerous. E. F. DuBois.—p. 685.
Antagonism of Anticoagulants Dicoumarol, Tromexan, and Phenylindandione by Vitamin K_1. M. Toohey.—p. 687.
Studies in Pre-Diabetes. I. Its Incidence in Cape, Its Early Detection, and Concept of Pre-Diabetic Father. W. P. U. Jackson.—p. 690.
Painful Spasm of Oesophagus ("Corkscrew" Oesophagus). G. Ismay. —p. 697.
Case of Idiopathic Porphyria. R. Hill.—p. 698.
Aetiological Significance of Geographical Variations in Cancer Mortality. C. D. Legon.—p. 700.
Bilateral Giant Renal Calculi. T. D. S. Holiday and S. Campbell.—p. 702.
Pethidine and Liver Damage. J. W. Dundee and L. F. Tinckler.—p. 703.

2:735-790 (Oct. 4) 1952

*Treatment of Pulmonary Tuberculosis with Isoniazid: Interim Report to Medical Research Council by Their Tuberculosis Chemotherapy Trials Committee.—p. 735.
A.C.T.H. and Cortisone in Treatment of Complications of Leprosy. J. Lowe.—p. 746.
Pneumonias Arising During the Course of Upper Respiratory Infections. J. P. P. Bradshaw, C. A. B. Bernstein and E. Bowers.—p. 749.
Friedländer's Pneumonia: Report of Six Cases. J. M. Barber and A. P. Grant. 752.
Circumcision in National Sample of 4-Year-Old Children. D. MacCarthy, J. W. B. Douglas and C. Mogford.—p. 755.
Two Human Infections Caused by Pasteurella Multocida. V. Bezjak and M. Mimica.—p. 757.
Improvement of Hearing in Malformation of External Auditory Meatus and Middle Ear. H. S. Sharp.—p. 758.
Unilateral Amaurosis with Partial Recovery After Using Hexamethonium Iodine. A. J. B. Goldsmith and A. J. H. Hewer.—p. 759.

Treatment of Pulmonary Tuberculosis with Isoniazid.—A controlled therapeutic trial of isoniazid was conducted by the Tuberculosis Chemotherapy Trials Committee of the Medical Research Council of Great Britain in 331 patients with various forms of pulmonary tuberculosis; 173 were treated with isoniazid (200 mg. daily) and 158 with streptomycin (1 gm. daily) plus *p*-aminosalicylic acid (20 gm. daily). The patients were divided into three groups: those with acute rapidly progressive disease of recent origin, those with other forms suitable for chemotherapy, and those with chronic disease considered unlikely to respond to chemotherapy. On admission the two treatment series had a similar distribution of patients with severe and less severe illness. Isoniazid showed low toxicity. At the end of three months there was more improvement in general condition in the patients receiving isoniazid than in the other patients, but the differences were not great. The conclusion, judging wholly from short-term results, is that isoniazid is a very effective drug in pulmonary tuberculosis, but given alone it is not more effective than streptomycin plus *p*-aminosalicylic acid. Bacillary resistance to isoniazid was found in 11% of cases at the end of the first month, in 52% at the end of the second, and in 71% at the end of the third. Lack of progress, as assessed by radiological change, was found to be related to the emergence of drug resistance. This is therefore a most serious problem affecting the use of isoniazid. The effects of combining isoniazid with other drugs are under study.

Canadian Medical Association Journal, Montreal

67:289-394 (Oct.) 1952

Cough Medication and Antihistaminic Drugs. E. M. Boyd.—p. 289.
Clinico-Pathological Study of Femoral and Popliteal Arteries in 152 Autopsies. G. C. Willis.—p. 302.
Intussusception. R. M. Wansbrough and R. W. Cram.—p. 307.
Continuous Infusion of Demerol During Anaesthesia. H. S. Randal, M. K. Belton and M. D. Leigh.—p. 311.
Leiomyosarcoma of the Stomach. G. D. Molnar and W. C. MacKenzie. —p. 313.
Hiccup: Ten Year Review of Anatomy, Etiology, and Treatment. L. Samuels.—p. 315.
Problem of Arthritis in Industry. J. M. Beauregard.—p. 326.
Abnormal Electroencephalogram as Related to Reading Disability in Children with Disorders of Behaviour. M. A. Kennard, R. Rabinovitch and D. Wexler.—p. 330
General Practice for the Younger Physician. P. Williamson.—p. 335.
Basal Body Temperature in Ovulation. S. Norris.—p. 336.
Recurring Dissecting Aneurysm of the Aorta. H. Z. Pomerantz, J. H. Darragh and G. K. Mallory.—p. 339.
*Coeliac Ganglion Syndrome. F. A. Walton.—p. 342.
Role of Sedimentation Rate in Diagnosis of Malignancy. O. D. Beresford. —p. 347.
Anaesthetists Role in Tonsillectomy and Adenoidectomy. P. B. Bercheson. —p. 349.

Celiac Ganglion Syndrome.—The term celiac ganglion syndrome has been chosen to describe a painful abdominal condition in which the pain pathways travel via the celiac ganglion. A similar or the same condition has been described in the past as biliary dyskinesia or functional bowel distress. The first of the four patients described had had three laparotomies, and both the appendix and uterus had been removed. She had had only temporary relief of her pain following each of these operations. The pain was sudden in onset, crampy, and occasionally burning in character and was associated with complete inability to pass stool or flatus. She was usually confined to bed with an attack. Vomiting accompanied the pain but gave no relief. The pain lasted several days at a time and was becoming progressively more frequent and of longer duration. A splanchnic block on the right side completely relieved her pain within one minute. She was discharged from the hospital. Subsequent attacks were again relieved by splanchnic blocks, but finally the right splanchnic nerves and the sympathetic chain from the eighth thoracic to the first lumbar inclusive were removed by a transthoracic approach through the bed of the 10th rib. The patient was pleased with the result of this operation. The other patients were also greatly disabled, and without the concept of splanchnic pain, which made adequate treatment possible, the patients had no future except possibly repeated futile laparotomies and eventual drug addiction. Whether to do a splanchnicectomy transthoracically or a celiac ganglionectomy transabdominally is a difficult question. The abdominal route permits examination of the viscera for disease, but the neurectomy may be incomplete. The thoracic route allows a more definitive neurectomy, but the postoperative intercostal neuralgia may be very discouraging. The pain is usually on the right side, and deep rather than superficial. The patients are rather tense. Hydration and nutrition is surprisingly well maintained, despite the vomiting. Difficulty in voiding seems to be common. Respiratory infections aggravate and precipitate the condition at times. Splanchnic block gives almost instantaneous relief.

Deutsche medizinische Wochenschrift, Stuttgart

77:1141-1172 (Sept. 19) 1952. Partial Index

Experiences with Serial Roentgen Examinations. H. Alexander.—p. 1141.
Segmental Resection in Pulmonary Surgery. K. Voszschulte.—p. 1146.
*Enzymatic Removal of Extrapleural and Intrapleural Hemothorax. H. Blaha and H. Wörn.—p. 1152.
Differential Diagnosis and Treatment of Pleurisy. H. Deist.—p. 1155.
Immunobiologic Processes in Acute Diffuse Glomerulonephritis. H. Sarre. —p. 1158.

Enzymatic Removal of Hemothorax.—According to Blaha and Wörn the enzymes streptokinase and streptodornase are most effective in the treatment of sterile hemothorax. In the cases reviewed here, they used the two enzymes combined in the form of "varidase," in doses of 148,000 units of streptokinase and 25,000 units of streptodornase. They treated 32 patients, 29 with extrapleural hemothorax and 3 with intrapleural hemothorax following lobectomy. The enzyme mixture, which was

dissolved in 20 cc. of isotonic solution of sodium chloride, was injected into the masses of fibrin or placed on top of the residual exudate if this was present. The usual approach was through the second posterior intercostal space. Treatment was usually begun between the fourth day and several weeks after the operation, in most cases between two and three weeks after operation. The results obtained were excellent in some, and good in the majority of cases. The hematoma became fluid after one or two instillations. In 20 cases a large quantity of exudate (600 to 1,200 cc.) could be withdrawn following the first instillation. Withdrawal should be carried out not later than 24 hours after the instillation, because after this time the enzymes are no longer active. In a few cases withdrawal is done earlier, from 8 to 12 hours after instillation. This early withdrawal may be necessary because of the irritation produced by the enzymatic material and because further exudation may produce pressure. In seven cases a second instillation of enzyme material became necessary; it was usually carried out from two to five days after the first one. Serious complications were not observed, and secondary effects were slight considering the results obtained. The aim of extrapleural pneumolysis, a fully effective extrapleural pneumothorax, could be obtained in nearly all cases. In the patients with lobectomy conditions could be induced that permitted reexpansion of the remaining part of the lung.

77:1173-1208 (Sept. 26) 1952. **Partial Index**

*Gastric Changes in Patients with Addison's Disease. F. Feyrter and R. Klima.—p. 1173.
Experiences with Cortical and Intracerebral Derivations of Electrical Currents Developed by Brain Action. T. Riechert and R. Schwarz. —p. 1175.
*Epilepsy with Psychomotor Attacks. H. Krayenbühl.—p. 1177.
Death from Coronary Insufficiency After Diencephalic Trauma. A. Dietrich.—p. 1181.

Gastric Changes Associated with Addison's Disease.—Changes in the gastric juice and in the histological character of the mucosa of the fundus of the stomach have been studied in eight living patients with Addison's disease, in seven patients who died of Addison's disease, and in eight patients with incompletely developed disease (addisonism). In the majority of the patients with Addison's disease the gastric secretion was considerably impaired, and in some of these patients histamine-refractory achylia was present. Microscopic examination of the fundus of the stomach in two patients with histamine refractory achylia revealed atrophy of the mucosa, interstitial inflammation, and replacement of the glands of the fundus by mucous glands, with nearly complete or complete disappearance of the parietal cells. In two of the eight patients with severe Addison's disease gastric hyperacidity was observed, and normal acidity was present in two others. The mucosa of the fundus was histologically normal in one of the patients with normal acidity. On the contrary, of the eight patients with incompletely developed Addison's disease (addisonism), four had hyperactivity of the gastric juice, and anacidity not refractory to histamine was observed in one. In two patients peptic ulcer of the stomach preceded the full development of Addison's disease. In comparison with the behavior of the gastric juice in the majority of the patients with fully developed Addison's disease, the gastric juice thus may show an opposite behavior in the initial stage and occasionally in the advanced stage of certain cases of Addison's disease and in addisonism. Erythrocyte and hemoglobin values in patients with Addison's disease were on the average lower than those in patients with addisonism.

Psychomotor Epilepsy.—Psychomotor epilepsy is reported in six patients between the ages of 16 and 37. The clinical picture was characterized by disturbances of consciousness associated with apparently voluntary movements, which in fact were badly coordinated and frequently showed a negativistic tendency on the part of the patient. Subcortical discharges with predominently homolateral slow rhythmical waves during the attack and with spikes in the anterior portion of one or both temporal lobes during the interval are to be considered pathognomonic of psychomotor epilepsy, or so-called temporal lobe epilepsy. This type of epilepsy is frequently associated with personality changes, and in cases in which medicinal treatment fails, satisfactory results may be obtained with surgical treatment. The author's patients demonstrated that a cryptogenic and a symptomatic form of the disease should be distinguished. The chief etiological factors in the symptomatic form are post-traumatic and post-infectious scars, tumors, and vascular lesions. Therapy consists of extirpation of the pathological tissues and the focus of the seizures, which should be detected by the electroencephalogram in the course of the surgical intervention. Postoperative management requires the administration of phenobarbital (luminal®) sodium for prolonged periods.

Edinburgh Medical Journal

59:457-508 (Oct.) 1952

Reticuloses and Lymphoreticular Sarcomas from Radiotherapist's Point of View. M. C. Tod.—p. 457.
Iron Absorption Tests in Anaemia: Use of Intravenous Iron Preparations. J. Crawley.—p. 478.
Neurological Complications of Some Infectious Diseases. G. Griffith. —p. 492.

Journal of Bone and Joint Surgery, London

34-B:343-540 (Aug.) 1952

Bone Changes in Skull in Dystrophia Myotonica. J. E. Caughey.—p. 343.
Deformity of Elbow Joint as Sequel to Erb's Obstetrical Paralysis. J. Aitken.—p. 352.
Hallux Valgus and Hallux Rigidus: Critical Survey of Operative Results. G. Bonney and I. Macnab.—p. 366.
Carpal Ganglion as Cause of Paralysis of Deep Branch of Ulnar Nerve. H. J. Seddon.—p. 386.
Nerve Compression by Simple Ganglia: Review of 13 Collected Cases. D. M. Brooks.—p. 391.
Solitary Tumours of Peripheral Nerve Trunks. S. A. Jenkins.—p. 401.
Haemophiliac Arthropathy of Hip. M. E. Winston.—p. 412.
Rotational Lordosis: Development of Single Curve. E. W. Somerville. —p. 421.
*Experiences with Boiled Cadaveric Bone. G. C. Lloyd-Roberts.—p. 428.
Abduction Arthrodesis of Hip. W. H. Kirkaldy-Willis and A. S. Mbuthia.—p. 433.
Tender Heel Due to Paget's Disease. J. G. Murray.—p. 440.
*Malformation of Lumbar Spinal Roots and Sheaths in Causation of Low Backache and Sciatica. S. Ethelberg and J. Riishede.—p. 442.
Changes in Head of Femur in Children Suffering from Gaucher's Disease. R. McL. Todd and S. E. Keidan.—p. 447.
*Gaucher's Disease in Bone. F. W. T. Davies.—p. 454.
Gaucher's Disease with Involvement of Both Hip Joints: Report of Case. O. J. Vaughan-Jackson.—p. 460.
Gaucher's Disease with Pseudocoxalgia: Report of Case. H. L.-C. Wood. —p. 462.
Gaucher's Disease: Report of Case. N. E. James.—p. 464.

Experiences with Boiled Cadaveric Bone.—Early results with boiled bone grafts did not seem to justify further trials, but many of the failures may have been due to technical errors. If it is assumed that cortical bone grafts become incorporated by a process of invasion by the host and that the graft does not survive in its transplanted state, it is difficult to understand why boiled bone should not be useful. Furthermore fusion followed without undue delay in one case in which a graft cut from the tibia was contaminated and had to be boiled before its transfer to the radius of the same patient. The boiled cadaveric bone the author has been using over the last two years in 112 bone-grafting operations is obtained at necropsy from the tibia and ilium. Soft tissue is scraped away. The bone is boiled for half an hour, cut into convenient lengths or blocks, and stored dry in a refrigerator. Before use it is boiled again for 20 minutes. This method is simple and does not require elaborate methods of asepsis or bacteriological control. The source is inexhaustible. In 55 of the 112 bone-grafting operations cadaveric bone was used in the spine, often in association with autogenous bone. There remain 34 patients that have been under observation for more than one year after grafting, and these form the subject of this report. Fusion of the graft was obtained in 26 cases. Excluding a case of osteogenesis imperfecta, all 8 cases in which fusion failed can be explained as failures in technique, in timing, or in attempting to make an unsupported cadaveric graft span a wide gap. There was no sepsis, except in one case of chronic osteomyelitis in which cancellous chip grafting failed. In four successful cases of chip grafting of bone cavities, two Brodie's abscesses, and one tuberculous cavity in the tibia (all with sinuses) were obliterated and a metacarpal bone was reconstructed after excision of a chondroma. This simple procedure has the advantage that little harm is done if the grafts are unsuccessful. The author feels

that cadaveric bone grafting is worthy of further trial, that it can be used with confidence when a bone graft is required for nonunion of a fracture, to supplement an intra-articular arthrodesis, or to obliterate a bone cavity or surgically produced bone defect. Its capacity to bridge a gap cannot at present be assessed.

Malformation of Spinal Roots and Sheaths in Backache and Sciatica.—A variety of lesions such as herniation of the intervertebral disk, hypertrophy of the ligamentum flavum, osteochondrosis, spinal neurinomas, root adhesion, and radiculitis have been recognized as causing lumbar root compression that results in pain in the lumbar region and in sciatica. The authors observed within recent years four cases with clinical changes indistinguishable from those found in the aforementioned conditions, but, on operation, malformation of lumbar roots and sheaths was found. These four patients are described. The history was long, the course intermittent, and the initial symptom pain in the back, eventually followed by pain in the leg. On neurological examination, however, the findings were more marked than is the case in intervertebral disk herniation. Weakness of dorsiflexion of the foot and loss of sensation was striking, whereas the straight leg raising test was commonly negative. In each of these cases a preoperative diagnosis of herniation of a lumbar intervertebral disk was made. The postoperative results suggest that it is of little importance whether a correct differentiation has been made preoperatively between herniation of lumbar intervertebral disk and malformation of roots and sheaths, because surgical intervention in both cases implies a decompressive laminectomy. Abnormalities of spinal roots have been described by pathologists and anatomists, but usually the abnormalities do not give rise to neurological changes. When such changes develop, as in the cases described here, it is probably because the abnormal roots and sheaths occupy the entire and limited intraspinal space, so that any diminution of this space, by even a slight narrowing of the intervertebral disk, may result in compression. The incidence of clinically significant anomalies of the nerve roots is low compared with the incidence of herniation of the lumbar intervertebral disk. Only these four cases were found in 1,162 cases of lumbar laminectomy performed over an eight year period.

Gaucher's Disease in Bone.—Many reports show that Gaucher's disease begins with splenomegaly and that osseous lesions develop later. Some observers even suggest that spread to the skeleton is precipitated by splenectomy. The author describes a case in which the disease apparently resolved in one area while it spread further in other zones. It also shows the value of deep x-ray therapy. The woman gave a history of pain and limp affecting the right hip for the previous six months. A splenectomy had been done four years before because of pain in the left hypochondrium associated with splenomegaly. At that time blood counts, sternal puncture, and skin biopsy failed to show evidence of infiltration by Gaucher's cells. Examination of the spleen, however, confirmed the diagnosis of Gaucher's disease. At that time no radiographic investigation of the skeleton had been made. Now she had apparent shortening of the right lower limb, a slight flexion contracture of the right hip, and limitation of all movements due to pain. Radiographs showed changes suggestive of osteochondritis of the right femoral head together with evidence of cavitation in the upper extremities of the shafts of both femurs. Traction was applied to both lower limbs for nine months, during which there was progressive improvement in the radiographic appearance of the femoral head. Later, when the patient sustained a pathological fracture through a cystic area in the upper end of the right femoral shaft, traction was reapplied. In the left femur infiltration of the marrow cavity was seen to continue but progressed less rapidly than the changes on the right side. Scrapings from the base of the neck of the femur and from the upper cystic segment of the shaft revealed massive infiltration by Gaucher's cells in spite of apparent resolution on roentgenograms. Although it is generally accepted that Gaucher's disease is unaffected by deep x-ray therapy, the response to this form of treatment in this case was striking. Later radiographs suggested that the process had been halted. Although this patient has been examined at regular intervals over the past six years, no further spread has been found in other parts of the skeleton. It may be argued that retrogression was already occurring in the first lesion in the femoral head before irradiation was begun. Nevertheless, the recent films do not indicate any evidence of the "deforming arthritis" that appears to be the usual outcome in untreated cases.

J. Franç. de Méd. et Chir. Thorac., Paris

6:297-408 (No. 4) 1952. **Partial Index**

*Detection of Disturbances of Pulmonary Arterial Pulsation in Patients with Bronchopulmonary Cancer by Means of "Kinedensigraphy." R. Kourilsky, M. Marchal and M. Decoisy.—p. 297.
Axial-Transverse Body Section Roentgenography. Ch. Gernez-Rieux and G. Bonte.—p. 306.
Effort to Explore the Respiratory Function by Means of Simple Tests. H. Laffont.—p. 321.

Kinedensigraphy in Bronchopulmonary Cancer.—The diagnostic procedure of kinedensigraphy, which records the motion and variations in the density of the roentgenographic cardiovascular shadows while taking the electrocardiogram at the same time, was first conceived by Marchal in 1934. The plan could not, however, be put into effect before 1946. The motion and density changes are recorded by a cathode ray oscillograph in the form of a tracing that in healthy persons is typical of the arterial pulsation. The hypothesis that impaired circulation is one of the earliest symptoms of cancer of the lung was proved by the authors with this technique. Arteriography is generally used for this purpose, but it is painful and sometimes dangerous, reveals mainly the deformations of the great vessels and the main arteries, and might cause arterial spasm because of the irritating character of the drug injected. Kinedensigraphy instead is painless and does not cause severe physiological vascular modifications. In this paper the authors report their results on 40 patients with cancer of the lung in whom the kinedensigraphic pulsations were studied. In five patients in whom metastases to the lung developed through the blood stream the amplitude of the pulsation was decreased, the rate was increased, and the rhythm was irregular. Of eight patients with cancer of the bronchioles, those with early cancer revealed vascular disturbances only in the area immediately around the tumor. When the cancer was localized in the mediastinal part of the lung and there was reaction of the lymph nodes, the pulsation was arrested in the entire lobe; when the cancer had reached the hilus and the lymph nodes were not too involved, the circulation of the lower lobe was not impaired; and when the cancer was near the hilus and sufficiently developed, either ventricular or aortic beatings were recorded. In the patients with peribronchial cancer there was no pulsation. This suppression was detected even when the cancer was associated with disturbances of ventilation, superimposed inflammation of the alveoli, and peripheral invasion with or without pleural effusion. According to the histopathological type of cancer, it was found that in all malignant types, especially atypical epithelioma, small cell epithelioma, reticulosarcoma, and epidermoid epithelioma, the arterial pulsation was always absent. In cases of benign epithelioma it was much less influenced than in malignant cancer. It is suggested that when kinedensigraphy reveals normal arterial pulsation of the pulmonary parenchyma in patients whose roentgenograms indicate cancer, the lesion is never malignant.

Lancet, London

2:593-646 (Sept. 27) 1952

Diagnosis of Mitral Incompetence Accompanying Mitral Stenosis: Review of 11 Cases Treated Surgically. A. Logan and R. Turner.—p. 593.
Chemical Imbalance Following Ureterocolic Anastomosis. F. M. Parsons, F. J. N. Powell and L. N. Pyrah.—p. 599.
Differential Absorption of Electrolytes from Large Bowel in Relation to Ureterosigmoid Anastomosis. D. Annis and M. K. Alexander.—p. 603.
*Streptomycin-P.A.S. Hypersensitivity Treated with A.C.T.H. K. Marsh.—p. 606.
Multiple Puncture with B.C.G. and Vole Bacillus Vaccine: Comparative Trial. I. M. Hall and J. A. H. Wylie.—p. 608.
*Temporal Arteritis Treated with A.C.T.H. J. V. Aveling and F. H. Stevenson.—p. 610.

ACTH in Treatment of Hypersensitivity.—Of 136 patients who were treated with *p*-aminosalicylic acid and streptomycin, 12 had undesirable side-effects, and the administration of *p*-aminosalicylic acid was stopped in four cases. No other patient had such an alarming reaction as the woman, aged 30, whose case is described. The woman became hypersensitive to sodium *p*-aminosalicylic acid and streptomycin, and she did not respond

when administration of the drugs was stopped and antihistamine compounds were given. Eventually encephalopathy developed, but, after treatment with corticotropin (ACTH), she recovered completely. She was later found to be sensitive to chloramphenicol and local anesthetic solution. These features may be due to the known toxic and allergic properties of drugs containing a benzene ring associated with an amino grouping. A warning is given against an early and optimistic assessment of patients treated with corticotropin or cortisone, because the condition of patients with pulmonary tuberculosis may deteriorate many months after the use of these potent hormones.

Temporal Arteritis Treated with ACTH.—Because arterial sections from patients with temporal arteritis reveal collagenous degeneration of the media with secondary intimal hypertrophy and fibrous thickening of the adventitia, treatment with corticotropin (ACTH) seems justified. This was carried out in a woman, aged 71, with a history of six weeks' bilateral frontal and temporal headaches, giddiness, and a moderate impairment of hearing. In the week before admission to hospital she had become drowsy, disoriented, and mildly aphasic. Her scalp was tender, and there was exquisite pain when her hard, nonpulsating, temporal arteries were even lightly touched. The patient was given 10 mg. of corticotropin every six hours. This was followed by eosinopenia, and after five days her pain had greatly decreased. Her sight, hearing, and speech were much clearer, and her appetite improved. After eight days of treatment she was sitting up in bed reading and had almost no pain. The dosage of corticotropin was then reduced to 7.5 mg. every eight hours and, after a further four days, to 5 mg. every eight hours, because the symptoms seemed to be controlled. After two days of this last dosage the pain returned, and the dose was increased to 7.5 mg. every eight hours. Within 24 hours the pain had again ceased. From then on, with the same dosage, she made good progress, and after three and one-half weeks treatment the temporal arteries, though still hard, nodulated, and pulseless, were no longer tender. After four weeks of treatment the injections were stopped. There was no recurrence of symptoms, and six weeks later the patient was well and doing her household work. Since the symptoms of temporal arteritis commonly continue for several months, it appears that corticotropin exerted a real effect.

2:647-690 (Oct. 4) 1952

Permanent Facial Paralysis: Role of Surgical Support. C. R. McLaughlin. —p. 647.
*Occupational and Personal Factors in Aetiology of Carcinoma of Lung. R. B. McConnell, K. C. T. Gordon and T. Jones.—p. 651.
*Further Studies on Natural Transmission of Common Cold. J. E. Lovelock, J. S. Porterfield, A. T. Roden and others.—p. 657.
Further Investigation Into Causes of Thrombophlebitis Following Intravenous Infusions. J. F. Bolton Carter, E. H. Milne and T. D. Whittet. —p. 660.
Hepatic Cholesterol Content in Nutritional Disorders. V. Ramalingaswami, S. Sriramachari and P. G. Tulpule.—p. 661.
Effect of Cortisone Acetate on Adrenal Ascorbic-Acid Depletion Following Stress. D. Abelson and D. N. Baron.—p. 663.

Etiology of Carcinoma of Lung.—The environmental, occupational, and smoking histories of 100 patients with carcinoma of the lung were compared with those of 200 inpatients of the same age and sex who had diseases other than cancer. Carcinoma of the lung was demonstrated in the 93 men and 7 women by biopsy, necropsy, or operation. Careful questioning showed that 47% of the cancer patients had been exposed appreciably to various dusts, fumes, and smokes; 43% of the controls had been similarly exposed. Only a slightly higher proportion of the cancer patients lived in industrial areas (60% as compared with 54% of the controls). An equal proportion of the two groups (16 to 17%) had lived near a gas-works or other industrial source of atmospheric pollution. No significant difference was found in the incidence of smoking or of the proportion of cigaret smokers in the two groups, but a significantly higher proportion (33.0%) of the smokers with cancer had smoked more than 20 cigarets per day than had the smokers without cancer (18.1%). It is possible that heavy smoking of cigarets may be a factor in the etiology of carcinoma of the lung.

Transmission of the Common Cold.—It has been established by several investigators that the common cold may be transmitted from man to man by nasal instillation of bacteria-free filtrates of infective nasal washings. This, however, throws little light on the ways in which colds are transferred under natural conditions. It was decided to study transmission, using material from persons with natural colds. Experiments carried out to compare the transmission of colds by different routes revealed that two colds developed in 25 volunteers exposed to droplet infection, three in 32 exposed to full contact, and two in 25 exposed to a contaminated environment. In some of these tests children acted as donors, but children did not appear to spread colds more readily than adults. Studies with artificial mists of infected particles revealed that the common cold virus can survive the spraying, and that a cloud of infected droplets will produce colds in some of the persons exposed. Contamination of the exterior of the nose is unlikely to produce a cold. The unsuspected absence of colds in volunteers who used contaminated handkerchiefs for 24 hours suggested that the virus might be particularly sensitive to drying. To test this hypothesis infective secretions were allowed to dry on gauze before being used for transmission studies. There were no colds in 10 volunteers exposed to infection by dry packs, and two colds among 9 exposed to moist packs inserted into the nose. The numbers do not permit a statistical comparison of the two methods, but suggest that the virus was inactivated by drying.

Lotta Contro Tubercolosi, Rome

22:393-516 (July) 1952. Partial Index

*Acquired Resistance of Myco. Tuberculosis to Isonicotinic Acid Hydrazide. E. Morelli and G. Daddi.—p. 397.
*Experience at "Carlo Fontanini Institute" with New Chemotherapeutic Antituberculous Preparation: Isonicotinic Acid Hydrazide. A. Omodei-Zorini.—p. 400.
Considerations on Rapid Closure of Tuberculous Cavities During Isonicotinic Acid Hydrazide Therapy. R. D'Ambrosio and P. Maroncelli. —p. 415.

Resistance of Mycobacterium Tuberculosis to Isoniazid.—The sensitivity of Mycobacterium tuberculosis organisms was tested in cultures from sputum of 100 patients with pulmonary tuberculosis who were under treatment with this drug. The bacilli disappeared from the sputum of eight patients, of whom five had received a total of 4 gm. of the drug, two 6 gm., and one 10 gm. No drug-resistant strains developed in 24 cases. In the others, the resistance, which increased as the total dose of drug increased, appeared after from 6 to 8 gm. of the antibiotic had been given, namely, from the 30th to the 40th day of treatment, since the average dose was 150 to 200 mg. daily. Most cultures were not resistant to concentrations greater than 100 μg per cubic centimeter; this degree of resistance, which is easily reached after three months of treatment, seems hard to surpass. In 68% of cases the bacilli developed pronounced drug resistance, but further studies are needed to ascertain whether it is a drawback to the use of the drug. Use of isoniazid in combination with streptomycin or the alternate administration of the two agents is suggested, since it was found that in many instances isoniazid greatly decreases the degree of resistance of Myco. tuberculosis to streptomycin.

Study on Isoniazid.—Results are reported of three months' experience with isoniazid at the Carlo Fontanini Institute in Rome. In vitro studies revealed that all gram-positive bacteria except Myco. tuberculosis and all gram-negative bacteria showed isoniazid resistance. The Myco. tuberculosis, however, is highly sensitive to the drug even after it has developed resistance to other antibiotics. In vitro the drug is more effective even in low concentrations of 7 mg. per kilogram of body weight than streptomycin in concentrations of 15 mg. per kilogram of body weight. During the first 12 days of treatment the titers of agglutinating antibodies decreased and then returned to the initial values, sometimes surpassing them. The renal function was not impaired, whereas the liver functions were altered in about half the patients. The respiratory function was improved in 83%; electrocardiographic changes indicating a lesion of the myocardium occurred in 39%, while in 4% the electrocardiograms became normal. Anatomical studies in the patients who died during therapy revealed pronounced congestion around and within the pulmonary cavities, edema of lung tissue around the vessels and in the lesions, congestion of the small intestine, and always dilatation of the heart. Sometimes even new foci that developed during therapy could be seen. The action of the drug,

which is different in the various clinical forms of pulmonary tuberculosis, was effective on the general condition, temperature, cough, and appetite of the patients with the severest forms of the disease, but it was poor in patients with empyema, osteoarticular tuberculosis, and cold abscesses. It was particularly effective in patients with tuberculous meningitis, especially if combined with dihydrostreptomycin. The roentgenograms did not reveal significant changes. Although the late results cannot be evaluated, many patients who during the first months of treatment had a great improvement have already had relapses. The author advocates combined therapy with isoniazid and dihydrostreptomycin, since these drugs are synergistic in vitro and in vivo.

Medical Journal of Australia, Sydney

2:293-328 (Aug. 30) 1952. **Partial Index**

The Painful Shoulder. S. Nelson.—p. 293.
Painful Shoulder. R. Hodgkinson.—p. 296.
Some Clinical Observations on Acute Infective Hepatitis. B. P. Billington.—p. 297.
*Successful Treatment of Severe Acquired Haemolytic Anaemia with Adrenocorticotropic Hormone (ACTH). E. G. Saint and H. J. Gardner.—p. 305.

2:361-392 (Sept. 13) 1952. **Partial Index**

Surgical Aspects of Korean War, March, 1951, to February, 1952. N. C. Davis.—p. 367.
Helicopter Evacuation in Korea. N. M. Kater.—p. 373.
Backache in Rheumatic Practice. J. H. Young.—p. 374.

2:393-424 (Sept. 20) 1952. **Partial Index**

Some Quarantine Aspects of Aviation Medicine: with Special Reference to International Agreements and Regulations. C. R. Wiburd.—p. 393.
Traumatic Rupture of Abdominal Viscera. R. S. Lawson.—p. 396.
Medicine and Humanity. M. C. Davis.—p. 402.
Penicillin Levels in Sputum Following Intramuscular Injection of "Estopen." G. L. McDonald and E. F. Thomson.—p. 407.

Corticotropin in Acquired Hemolytic Anemia.—A woman with acquired hemolytic anemia and with a severe hemolytic reaction following transfusion and splenectomy responded very favorably to the administration of corticotropin. Even after cessation of corticotropin therapy she remained in clinical remission. Studies with the woman's serum revealed that, during treatment with corticotropin, autoagglutinin activity was significantly suppressed. At the termination of treatment agglutinin titers rose, but remained at reduced levels. It is suggested that corticotropin should be given prior to splenectomy to suppress hemolysis, which may be accelerated by transfusion. Thus optimal conditions will exist during the operation and for at least five weeks thereafter.

Minerva Medica, Turin

43:291-314 (Sept. 3) 1952. **Partial Index**

Temporal Arteritis: Diagnosis, Pathogenesis and Therapy. G. D'Antuono.—p. 301.
*Hemorrhagic Disease Due to Bishydroxycoumarin (Dicumarol®) Intoxication. A. Colli.—p. 303.
Latent Carcinoma of Breast. M. Ferrando.—p. 307.

Hemorrhage Following Bishydroxycoumarin Therapy.—During bishydroxycoumarin (dicumarol®) therapy a severe and fatal hemorrhage can occur if the blood prothrombin level is not checked daily and carefully. The most painful prodromal sign, which lasts about 24 hours, is an intense pain in the lumbar region, the lower quadrants of the abdomen, or the shoulders. The onset of the hemorrhage is revealed by pronounced hematuria and metrorrhagia and a sudden cerebral hemorrhage with or without meningism. There may be petechiae in the skin and subcutaneous tissue and sometimes hematomas under the jaws and the tongue. The hemorrhage involves mostly the nervous system, and the commonest site is the right side of the brain (left hemiplegia). Bishydroxycoumarin exerts its action on coagulation and on the vessels wall. It is suggested that it brings about hypocoagulability by inhibiting prothrombin synthesis in the liver. Others suggest that perhaps the production of prothrombin is altered and that it is not able to transform itself after the thromboplastin action, and others that it interferes directly with prothrombinogenesis or the initial phases of coagulation. Action of the drug on the vascular system is proved by the capillary fragility present in patients who are taking the drug. The diagnosis of hemorrhage due to bishydroxycoumarin intoxication is best established by determining the prothrombin level with Quick's method (values below 10% indicate that decrease of prothrombin is responsible for the hemorrhage), the coagulation time, the capillary fragility, and the presence of anemia with reticulocytosis and of neutrophil leukocytosis. The prognosis rests on an early diagnosis and is generally unfavorable in patients who had previously had liver or kidney disturbances, hypoprothrombinemia due to salicylates, or anemia. Prophylaxis consists of (1) giving bishydroxycoumarin only after the prothrombin level and the functioning capacity of the liver and kidney are known, (2) determining the prothrombin level daily, (3) giving 300 mg. of the drug every day until a prothrombin level of 50% is reached and then suspending the therapy, and (4) beginning again with 50 to 100 mg. of the drug daily if the prothrombin level increases. When the hemorrhage has already occurred, the best therapy is administration of vitamin K and simultaneous blood transfusions.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

96:2261-2332 (Sept. 13) 1952. **Partial Index**

Acute Anterior Poliomyelitis: Paralytic Phase. J. J. G. Prick.—p. 2265.
Acute Pancreatitis During Pregnancy. M. M. Madlener.—p. 2274.
Reflex Sympathetic Dystrophy of Arm: Shoulder-Hand Syndrome. R .G. A. van Wayjen.—p. 2280.
*Reduction of Blood Pressure in Pregnant Women with Essential Hypertension. J. L. Mastboom.—p. 2288.
Atypical Rubeola in Adults. R. S. ten Cate.—p. 2302.

Reduction of Hypertension During Pregnancy.—The greatly increased blood pressure of pregnant women with essential hypertension rarely decreases during the second half of pregnancy, although in midpregnancy about 40% of women with essential hypertension show the so-called midpregnancy drop. Since this reduction in the blood pressure of hypertensive pregnant women was first reported in 1939, several investigators have studied the frequency and possible cause of this drop. Mastboom presents the history of a woman, who, during the 13th week of her 10th pregnancy, at the age of 43, was found to have a blood pressure of 230/150. After she was hospitalized, the blood pressure was found to be 200/140 with bed rest. Two days on a diet of water, sugar, and fruit reduced the tension to 155/95. Then a salt-free vegetarian diet was started, and during the 16th week of her pregnancy her blood pressure was 135/85. After that the reduction continued to a minimum of 105/65 during the 21st week. During the last 10 weeks of the gestation the pressure varied between 125/85 and 105/65. Labor was induced because of fear of the intrauterine death of the fetus, and a living child, weighing 3,650 gm. was delivered. After delivery the blood pressure gradually increased again and reached the former hypertensive level, being 180/110 6 weeks after delivery and 200/125 between the 14th and 20th weeks. The author believes that the midpregnancy drop in hypertension is due to a decrease in the humoral regulation of the arteriolar tonus during pregnancy, as a result of a temporary relative insensitivity to pituitrin and angiotonin.

Nordisk Medicin, Stockholm

48:1189-1220 (Aug. 29) 1952

*Restoration on Vital Functions in Organism After Acute Loss of Blood. A. V. Guljajev.—p. 1189.
Significance of Greatly Increased Sedimentation Reaction; 348 Cases with Sedimentation Reaction over 100 mm. K. Kirkeby and P. Leren.—p. 1193.
Treatment of Bladder Paralysis in Traumatic Injuries of Spinal Cord. S. T. Jeppsson and D. H. Ingvar.—p. 1196.
Sacral Operation in Palpable Rectal Cancer. R. Brandberg.—p. 1201.
Tuberculosis Morbidity After Stomach Resection for Peptic Ulcer. P. Skjelbred and A. Drabløs.—p. 1204.
Stripping of Varicose Veins: Operative Technic and Result of After-Examination of 85 Cases Operated on. B. Göthman and S. Hagberg.—p. 1207.
Reconstruction of Urethra. A. Sjövall.—p. 1210.

Restoration of Vital Functions After Acute Loss of Blood.—Guljajev designates the disturbances after acute loss of blood due to the loss of erythrocytes as the anemic factor, and those due to decrease in blood volume as the hemodynamic factor. Following acute loss of blood an erythrocyte volume of 10 ml.

per kilogram of body weight is sufficient for the maintenance of life in uncomplicated cases and with normal compensatory reactions. Intravenous infusion of blood in sufficient quantity can overcome extensive loss of blood as long as at least minimal heart activity remains and insures circulation. Clinical death, with arrest of cardiac activity and respiration, lasts five or six minutes, after which irrevocable changes take place in the brain cortex. During this time there is a possibility of restoration of the vital function by immediate active measures. Most important is intra-arterial blood transfusion in a centripetal direction, under pressure which exceeds the arterial pressure, to restore the circulation of blood in the coronary vessels. During the last stages of loss of blood, especially loss due to trauma, intravenous transfusion may not only be without effect but even directly injurious. Real or biological death takes place when the vital functions of the organism cannot be restored. The basis for the death mechanism in acute loss of blood is anemia and hypoxia of the brain. The author says the concept must be revised that the loss of 50 to 60% of the total blood quantity is fatal. A larger loss followed by clinical death is not fatal provided immediate sufficiently effective measures are applied in the fight to sustain life.

48:1255-1286 (Sept. 12) 1952. **Partial Index**

*Criminality and Lobotomy. E. J. Linneman.—p. 1257.
Cortisone in Shock in Barbiturate Intoxication. E. Høyrup.—p. 1263.
Radioactive Iodine in Diagnosis of Nervous Diseases with Change in Metabolism. K. Kirkeby and P. Leren.—p. 1266.

Criminality and Lobotomy.—Linneman describes the cases of six criminal psychopaths, three men and three women, with explosive outbursts of emotion in whom bilateral frontal lobotomy was done. A connection was believed to exist between their "explosivity" and criminality. The operative treatment was considered after all other medical and psychiatric therapy was without avail. After the operation the patients were definitely subdued in their affective reactions. Two patients have been socially rehabilitated without signs of criminality for several years, and a third patient will probably be rehabilitated. One patient relapsed into criminality. The fate of the two remaining patients, not yet discharged, is uncertain.

Presse Médicale, Paris

60:1251-1270 (Sept. 27) 1952

Sympathectomy and Carotid Ligation. G. Arnulf.—p. 1252.
*Controlled Lowering of Blood Pressure by Methonium Derivatives in Surgical Practice. G. Lazorthes, L. Campan, H. Anduze and L. Stellet. —p. 1253.

Methonium-Controlled Lowering of Blood Pressure.—Three methonium derivatives were used for controlled lowering of blood pressure in 100 patients undergoing neurosurgical operations. Hexamethonium bromide was used in the majority of the cases and less frequently N, N, N′, N′-3-pentamethyl-N, N′-diethyl-3-azapentane 1-1,5-diammonium (9295 C) and pentanethylenebis(trimethylammonium bromide). As a result of their experience with these ganglionic blocking agents the authors emphasize that, although in general the action of the derivatives is comparable, the time required for the induced hypotension, its duration, and reversibility varies with the various methonium derivatives. Furthermore, in order to obtain with the same drug the same reduction of blood pressure under the same conditions, the dose to be employed varies with the individual patient. Patients anesthetized with thiopental sodium may manifest a certain resistance to the ganglionic blocking agent, while repeated injections of this anesthetic following the administration of the ganglion blocking agent may occasionally produce an undesirable increase of hypotension. This anesthetic should therefore be used with caution during the ganglion blockade. The hypotensive effect of the ganglionic blocking agent is delayed and in general weakened by the dilution of the drug used and by the slowness of its administration, two factors that, on the other hand, reduce the risk associated with this method. It seems advisable to dilute 100 mg. of the drug in 100 cc. of saline solution, to administer it by infusion (10 mg. every minute), and to interrupt the infusion briefly after administration of 25 mg. for recording its effect. Orthostatic positioning of the patient with the operative area at the highest point is of additional importance to keep the operative field dry. Stability of the induced hypotension, maintenance of a relatively high oscillometric index, and higher blood pressure in the lower extremity than in the upper extremity are significant signs for controlling the hypotension. Hyperpnea and Cheyne-Stokes respiration are to be considered warning signs of cerebral ischemia. Protracted deep hypotension and any reduction of blood volume should be avoided. Hemostasis should be particularly watched, especially in the meningeal plane. Persistent cerebral collapse may be observed in the postoperative course, particularly in cachectic, dehydrated patients of advanced age. A persistent disturbance of the cerebrospinal hydraulics is suggested as the mechanism of this complication.

Scalpel, Brussels

105:1131-1156 (Sept. 13) 1952

*Preliminary Note on Appearance of Resistance to Isonicotinic Acid Hydrazid. A. Petit.—p. 1131.

Resistance to Isoniazid.—The sputums of 76 patients with pulmonary tuberculosis who had been treated exclusively with isoniazid were collected for 52 hours and tested before the institution of the treatment, each week or every second week during treatment, and each month after treatment had been terminated. Thus 750 direct and 100 indirect tests were made on the solid medium recommended by the American Trudeau Society. A preliminary report is presented of the results obtained with the bacillus-laden sputums of 48 patients who had been treated for 8 to 12 weeks with isoniazid in doses of 5 to 8 mg. per kilogram of body weight. Before the institution of the treatment the majority of the bacilli were sensitive to concentrations of 0.1 μg per cubic centimeter, but in 8 cases the bacilli proved to be resistant to concentrations of 0.1 μg per cubic centimeter and were sensitive to concentrations of 0.5 μg per cubic centimeter. Thus a concentration of 0.1 μg per cubic centimeter is to be considered as the ceiling of "normal" resistance. In the course of the treatment the resistance of the bacilli tended to increase in the majority of the cases. On several occasions the appearance of strains resistant to concentrations of 0.5 and 1 μg per cubic centimeter preceded only somewhat an increase in the number of bacilli in the sputums and the appearance of strains resistant to even higher concentrations. Organisms resistant to concentrations of 0.5 and 1 μg per cubic centimeter should therefore be considered in the range of "intermediary" resistance. The appearance of strains resistant to 5 μg per cubic centimeter or more was in most cases associated with a recurrence of cough and increased expectoration. Furthermore, with the doses used, this concentration of 5 μg per cubic centimeter was no longer attained in the blood. It, therefore, seems logical to consider the concentration of 5 μg per cubic centimeter as the probable threshold of "clinical" resistance. Clinical resistance to isoniazid appeared between the fourth and ninth week of the treatment when this drug was used exclusively. In order to delay the appearance of this clinical resistance, combined treatment with isoniazid and antibiotics seems to be indicated.

Wiener medizinische Wochenschrift, Vienna

102:775-796 (Sept. 27) 1952

*Experiences with Treatment of Bone and Joint Tuberculosis Using Koleszar's Method of Insertion of Metallic Magnesium. K. Chiari. —p. 777.
Roentgenologic Measurements of Size of Heart and Unipolar Electrocardiogram. K. Fochem and G. Seiller.—p. 782.
Therapy of Mercuric Chloride Poisoning. H. Saexinger.—p. 786.

Metallic Magnesium Therapy for Bone and Joint Tuberculosis.—A new method of treatment devised by the Hungarian worker Koleszar was tried in eight patients between the ages of 11 and 59, seven of whom had tuberculosis of the joints and one of whom had severe osteomyelitis with pathological dislocation of the hip-joint. This method, called "magnesium studding" by the author, consists of the insertion of a metallic magnesium peg into an artificially produced canal in the cortex of the diseased bone. The canal is made by driving a small hollow metal cylinder sharpened on one end over a Steinmann nail 3 mm. in diameter previously driven into the articular ex-

tremity of the diseased bone. The nail is then removed, and the magnesium peg is inserted through the cylinder into the preliminary bore. Then the cylinder is removed and the skin sutured. According to Koleszar, this treatment produced pronounced improvement of the general condition and immediate relief of pain. He regularly observed increased calcification on roentgenologic examination. Most of his patients were children and adolescents. Of the author's eight patients, a 59-year-old man with tuberculosis of the tibiotarsal joint was a therapeutic failure. Another 44-year-old patient with tuberculosis of the neck of the femur has not been followed long enough for definite evaluation, but despite several healed fistulas, success of the treatment seems questionable. Three patients between the ages of 20 and 25 responded satisfactorily to the treatment. In one of these patients, in whom ankylosis had failed to occur after excision of the knee joint, arthrodesis was obtained and amputation of the femur was prevented; in another of these patients severe progressive coxitis was arrested. In a 36-year-old man with tuberculosis of the knee joint, an active progressive focus the size of a plum was reduced within six months to the size of a hazel nut. In a 51-year-old man with tuberculosis of the elbow joint, suppuration diminished and there was roentgenologic evidence of improvement. All these patients were treated during the war years when food conditions were bad and patients had to be discharged from hospital as soon as possible after the surgical intervention because of the shortage of hospital beds. The effect of the treatment on the tuberculosis may be explained by the alkalosis that results from the electrolytic decomposition of the magnesium in the inflamed tissues in which otherwise acidosis is usually predominant. The number of patients treated is too small to permit definite conclusions, but the favorable responses observed, particularly in the younger patients, could have been expected only after a much longer period of conservative treatment under the most favorable conditions in a sanatorium. As a result of his experience and Koleszar's reports, the author states that duration of treatment of tuberculosis of bones and joints may be shortened considerably by the new method which may make sanatorium treatment unnecessary.

Zentralblatt für Chirurgie, Leipzig

77:1481-1528 (No. 35) 1952. **Partial Index**

Carcinomas of the Gastric Stump. P. Kyrle and H. Wild.—p. 1481.
Surgical Methods for Gastric and Duodenal Ulcers Evaluated on Basis of Late Observations on 100 Patients After Gastric Resection. D. Lazar. —p. 1488.
*Implantation of Hypophysial Tissue for Trigeminal Pain. E. Bues. —p. 1500.
*Complications from Use of Iodized Oil in Myelography. K. Themel. —p. 1508.

Implantation of Hypophysial Tissue for Trigeminal Pain.—Since implantation of hypophysial tissue had proved helpful in counteracting the pains resulting from malignant tumors, it was decided to try this procedure in patients with trigeminal pain. The pituitary used for this purpose is obtained from a calf. It is implanted as early as possible, being kept warm during transport from the slaughter-house to the hospital. It is implanted under the fascia of the rectus muscle after immersion in penicillin solution. Observers who had resorted to hypophysial implantations in cancer patients had ascertained the efficacy of the implant from tests on the urinary excretion of prolan, the gonadotropic principle. Although the prolan test was not made in the 16 patients in whom pituitary tissue was emplanted because of trigeminal pain, some of these patients were given injections of prolan in addition to the pituitary implantation in the hope that prolan, the gonadotropic principle, was the effective substance in the pituitary transplant. Six of the 16 patients treated had tic douloureux and all except one of these obtained favorable results, being free from pain for from three to eight months. Among the patients with persistent trigeminal pain, two with migraine neuralgia also were freed from their pain for long periods. Of the other patients with persistent forms, only one patient was greatly improved for two months. In all, 9 of the 16 patients were improved for several months following implantation of a fresh calf pituitary. All of those who derived benefit from the implantation showed euphoria, although the sensitivity to pressure, particularly at the point of emergence of the nerve, remained unchanged. This suggests that stimulation of the endocrine system and the resulting improvement in vitality is the most essential effect of hypophysial implantation, which the author recommends especially for cases of migraine neuralgia and in some special cases of trigeminal neuralgia.

Complications from Use of Iodized Oil in Myelography.—Themel presents the case of a man, aged 50, in whom myelography was done because of suspected protrusion of the nucleus pulposus. After air myelography failed to corroborate this diagnosis, 2 cc. of an iodized oil (40%) was injected into the spinal canal between the fourth and fifth lumbar vertebrae. When the needle was introduced some blood appeared at first, but then the spinal fluid was clear. After the iodized oil had been injected, the patient complained of pressure and pain in the pelvis and in the legs. Two days later, herpes zoster lesions and paresthesia developed on the legs; there was fecal incontinence, and spontaneous urination was impossible. The urine contained bacteria and a few erythrocytes. Attempts to remove the iodized oil from the sacral canal about a month after injection yielded about 0.5 cc. of the oil. The patient died of cystopyelonephritis and uremia about seven weeks after the contrast medium had been introduced. Necropsy revealed particles of the iodized oil in the spinal meninges. Deposits of iodized oil and the hemorrhage apparently produced a compression of the cauda equina and changes in the spinal meninges. If hemorrhage appears on entering the spinal canal the injection of contrast medium should be postponed for some time, particularly if the disorder for which the patient is examined is chronic. Efforts should be made to cure inflammations of the urinary passages before myelography is attempted in order to prevent ascending urinary infections. Urine obtained by catheterization prior to myelography should be free of bacteria. Furthermore, it is advisable to remove the iodized oil as soon as possible after myelography.

Ztschr. f. d. ges. innere Medizin, Leipzig

7:817-864 (Sept. 15) 1952. **Partial Index**

Phenomenon of Hemorrhagic Necrosis. P. G. Hesse.—p. 820.
Acute Silicosis. W. Mohnke.—p. 835.
Danger of Pneumothorax Following Resection of Goiter. G. Ostapowicz. —p. 839.
Iron Deficiency: Diagnosis and Treatment, Particularly with an Intravenously Injectable Trivalent Iron Compound. C. Petzold.—p. 843.
Influence of Penicillin Content of Serum on Syphilitic Reactions. R. Damerow and W. Schünemann.—p. 859.
*Oral Administration of Penicillin in Treatment of Scarlet Fever. F .G. Hensel.—p. 862.

Oral Administration of Penicillin in Scarlet Fever.—Hensel comments on the destruction of orally administered penicillin by the hydrochloric acid of the stomach, by intestinal bacteria and by the liver, which make it necessary to administer 10 times as much orally as intramuscularly. He shows that, by addition of neutralizing buffer substances to the penicillin, oral administration of penicillin can be made more effective. Of two buffered penicillin preparations available, he employed one in which a calcium penicillin was combined with trisodium citrate, each 0.5 gm. tablet containing 50,000 units of amorphous calcium penicillin. The preparation was given eight times daily for six days in water or tea. Daily doses ranged from 600,000 to 1,000,000 units and total doses from 3,600,000 to 6,000,000 units. This form of medication was used in a total of about 150 scarlet fever patients, of whom 100 are evaluated, their treatment having been completed long enough to estimate relapses and complications after return to their homes. The penicillin concentration in the blood obtained with those doses was ascertained on 75 blood samples obtained from 50 patients. The clinical course of the scarlet fever was about the same under treatment with orally administered penicillin as with the customary injection therapy. The fever subsided on the average in three and one-third days. Specimens obtained from the throat revealed disappearance of the hemolytic streptococci, usually after one day of treatment. In a few of the patients they reappeared following cessation of penicillin therapy. Relapses and complications such as rheumatoid disorders, otitis media, lymphadenitis, tonsillitis, and nephritis occurred in 19% of the patients. The author concludes that oral administration of penicillin is about as effective in scarlet fever as the injection method.

BOOK REVIEWS

Gynecologic and Obstetric Pathology with Clinical & Endocrine Relations. By Emil Novak, A.B., M.D., D.Sc., Gynecologist, Bon Secours and St. Agnes Hospitals, Baltimore. Third edition. Cloth. $10. Pp. 595, with 630 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1952.

This edition is far more comprehensive than the previous editions. It has been thoroughly rewritten and contains nearly 100 new illustrations. Novak has given particular attention to reevaluation and recrystallization of such subjects as carcinoma of the cervix, carcinoma in situ, hydatidiform mole, and certain ovarian tumors. Many uncommon lesions not discussed in the previous editions are included in the new edition. The chapters are arranged in the same order as before, but at the end of the book is a new chapter, "Diseases of the Breast of Gynecologic Interest."

Novak insists that pathology is his hobby; if it is, his knowledge of pathology surely does not take second place to his knowledge of gynecology and his skill as a gynecologist. No one will dispute that Novak is one of the foremost gynecologic pathologists in the world, most likely the foremost. For this reason the book is a classic, and it would be presumptuous to criticize its contents. The data are definitely authoritative, and they are presented in Novak's inimitable style. Everything concerned with gynecologic pathology is presented and abundantly and beautifully illustrated. Many of the illustrations are in color. At the end of each chapter is a well-selected list of references. Because Novak is the foremost example of combined gynecologist and pathologist, the book contains discussions of the relationships of the two subjects based on his vast experience in both fields. The book is more than a textbook of pathology, every gynecologist, obstetrician, and pathologist should study it. Both the author and the publishers are to be congratulated on the book.

Infrared Photography in Medicine. By Leo C. Massopust, Sr., Director, Department of Art and Photography, Marquette University School of Medicine, Milwaukee. Publication number 152, American Lecture Series, monograph in American Lectures in Medical Photography. Edited by Ralph P. Creer, Secretary, Committee on Medical Motion Pictures, American Medical Association. Cloth. $2.75. Pp. 53, with 31 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, 1952.

This is a brief treatise on a rather specialized branch of clinical photography. The author is an authority in his field and is well qualified to write on the subject. The value of the infra-red technique in the photography of selected gross pathological specimens and of the superficial venous system and its use in photomicrography is discussed and well illustrated. The application of infra-red photography to ophthalmology should have been developed in more detail, and at least one illustration of an infra-red photograph taken through an opaque cornea might have been included. In spite of its shortcomings, the booklet will be of value to physicians, research workers, and medical photographers who are interested in the subject. The author's list of 45 references will be helpful to those who wish to pursue the subject in more detail.

Pharmacopoeia japonica, editio Sexta. English edition. Cloth. Pp. 892. Ministry of Health and Welfare, 1,2 Chome, Kasumigaseki, Chiyodaku, Tokyo, 1952.

It is amazing that such an extensive revision could be made and then appear in such a good translation so soon after the close of World War II. The present edition contains monographs for 643 drugs and pharmaceutical aids. Most of the substances are familiar to the western world. Except that the tests and assays are simpler in many instances, the book reminds one of the U. S. Pharmacopeia, on which it is claimed to be modeled. The printing, binding, and index are good.

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Skin Therapeutics: Prescription and Preparation (Materia Medica Dermatologica). By M. K. Polano, Head of Dermatological Department, Municipal Hospital, The Hague (Netherlands). With Introduction by Clarence S. Livingood, Professor of Dermatology, University of Texas, Galveston. Cloth. $6.50. Pp. 276. Elsevier Publishing Company, 402 Lovett Blvd., Houston, 1952.

Dr. Polano believes that physicians cannot treat skin diseases effectively and that pharmacists cannot compound dermatological prescriptions properly without a more thorough understanding of topical remedies than is ordinarily obtained in schools of medicine or pharmacy. He deplores the increasing tendency toward the use of ready-made proprietary ointments of unknown or partly known composition, since these preparations are often unnecessarily expensive and not capable of precise adaptation to the stages and sites of the dermatosis or to the activities and esthetic requirements of the patient. As a result, he has compiled this comprehensive manual and reference work on dermatological pharmacology and pharmaceutics. In it he has collected from the world's medical literature and from his own extensive clinical and laboratory experience a tremendous amount of useful information and has organized it into a system for the prescription, compounding, and use of topical dermatological preparations.

Dr. Polano first lists and describes the basic materials (powders, greasy bases, and liquids) used in the preparation of dermatological vehicles and then discusses the properties and actions of the different vehicles (lotions, emulsions, creams, and pastes) that can be produced by mixing these basic materials. Next, he considers the specific drugs employed in these vehicles and the modification of their effects by the vehicles. Finally, he suggests methods for the selection of the proper vehicle in specific dermatoses, including the use of the paired comparison technique. Numerous illustrative prescriptions are provided in the text, with directions for their proper compounding. One of the valuable features of this work is its synthesis of information, practice, and terminology from many countries. Throughout the text and in extensive tables it compares related drugs and prescriptions from the pharmacopeias and formularies of the United States, Great Britain, Switzerland, Denmark, France, Germany, Italy, Spain, and Sweden to facilitate international communication and understanding. The book is well organized and clearly written. It contains much of practical value to physicians and pharmacists who prescribe and compound dermatological drugs.

Malignant Disease and Its Treatment by Radium. Volume IV. By Sir Stanford Cade, K.B.E., C.B., F.R.C.S., Surgeon, Westminster Hospital, London. With foreword by Sir Ernest Rock Carling, F.R.C.P., F.R.C.S., F.F.R., Consulting Surgeon and Vice-President, Westminster Hospital. Second edition. Cloth. $12.50. Pp. 544, with 785 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1952.

This volume covers not only treatment by radium but treatment by x-ray therapy, radioactive isotopes, nitrogen mustard, urethane, and surgery. Collaborating authors include Dr. George Lumb, Dr. F. M. Allchin, Prof. B. W. Windeyer, Dr. J. W. Stewart, Dr. Dennis Williams, Dr. Wylie McKissock, and Dr. Jackson Richmond. As Prof. Rock Carling states in his preface, "while this book has garnered the literature fully, it is in fact the record of one man's observation and interpretation assembled for the guidance of others. Attention must be drawn to the plain common sense which underlies the author's lucid presentation of problems in diagnosis and treatment."

The subject matter includes the following topics: malignant disease of the skin, malignant disease of the kidney, testis, and prostate, bone sarcoma, sarcoma of soft tissue, tumors of lymphoid tissue, the leukemias, and intracranial tumors.

The book is well illustrated with photographs and roentgenograms; some of the illustrations are in color. While statistics are an important part of the work, they are not burdensome and do not detract from this book, which is easily read and understood. For therapists, there are special chapters on treatment by irradiation, chemotherapy, and radioactive isotopes, with a very complete bibliography.

The first edition of this book covered the period 1924 to 1939, during which 4,000 patients with malignant disease were seen by the author at Westminster Hospital in London. Of these, about 3,000 were treated by radiation either as the sole method of therapy or in combination with surgery. In the preface to this edition, the author states that the book has been nearly entirely rewritten and contains new chapters on the reticuloses and the leukemias. There has been a further number of new cases and also more follow-up detail on cases previously reported.

This book stands as a monument to a great surgeon and radiotherapist, whose sound knowledge of disease and skilful and accurate use of radium and surgery have been employed in the best interests of his patients. Through his book the results of his experience are now available to those who follow in his lead.

The Medical Inspection of School Children. By Edgar Henry Wilkins, M.B., B.Ch., D.P.H. Cloth. $4. Pp. 224 with 21 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; Baillière, Tindall & Cox, 7-8 Henrietta St., Covent Garden, London, W.C.2, 1952.

The British attitude toward the school health program is different than the American attitude, though the clinical and social aspects of the health problems of children are much the same, regardless of which country these children are found in. Edgar Henry Wilkins prepared this work before his death in 1946, and it has now been edited, brought up-to-date, and published by an editorial committee of his associates, to bring his lifetime of study to the benefit of others concerned with the health of school age children. This book is rich in its discussion of the social aspects of child health. The conditions of family life, environment, health superstition, and general physical cleanliness described in this volume are found only in the very backward areas of the United States, but they occur often enough in both rural and urban slums to warrant their consideration by American physicians concerned with child health. More attention is given to posture and to orthopedic deviations resulting from malnutrition and poor habit patterns than is customary in American books. Except for these two obvious differences, most of this book would be applicable to the supervision of school children in America as well as in England.

This book could hardly be considered a necessary part of the reading of a school physician or a physician concerned with school children in America, but it would be a valuable addition to his library, if for no other reason than to suggest the important relationship of the social aspects of growth and development to the health of the children that he will be seeing in his practice.

Terapéutica dermatológica. Por Miguel Angel Mazzini, profesor adjunto de Clínica dermatosifilográfica de la Facultad de ciencias médicas de Buenos Aires, y Arturo M. Mom, adscripto a la Cátedra de Clínica dermatosifilográfica de la Facultad de ciencias médicas de Buenos Aires. Cloth. Pp. 638, with 166 illustrations. Lopez & Etchegoyen, S.R.L., Junin 863, Buenos Aires, 1952.

For physicians who read Spanish this is a useful and up-to-date handbook of therapy in dermatology and syphilology. The authors, prominent dermatologists of Argentina, have outlined in considerable detail the modern treatment of the more important dermatoses and venereal diseases, placing special emphasis on diseases of known cause for which there are specific remedies. The sections on syphilis, tuberculosis, leprosy, fungus infections, the pyodermas, and the eczemas are particularly complete. Each chapter begins with a brief description of the clinical and laboratory features of the disease in question, but the major portion of text is devoted to therapy. Some 350 prescriptions for the topical and systemic use of appropriate drugs are provided, along with details of physical, surgical, and psychological therapy. Among the drugs discussed are the newer antibiotics and cortisone and corticotropin. An extensive glossary of dermatological and pharmacologic terms, which will be especially helpful to physicians outside the field, is provided at the end of the volume. A chapter on cosmetic preparations has also been included. The material is well organized, concisely presented, and adequately indexed throughout. A short bibliography follows each chapter. The book is attractively bound and printed on paper of good quality. There are numerous clinical and histopathological illustrations of fairly good quality. This volume is a credit to South American dermatology.

Experimentelle Bakteriologie und Infektionskrankheiten mit besonderer Berücksichtigung der Immunitätslehre. Begründet von W. Kolle und H. Hetsch. Neubearbeitet von Prof. Dr. Hans Schlossberger, Frankfurt a.M. Eleventh edition. Cloth. 72.40 marks. Pp. 986, with 164 illustrations. Urban & Schwarzenberg, Thierschstrasse 11, München 22; Meinekestr, 13, Berlin W. 15, 1952.

This work can be described as the reincarnation of the well-known treatise of Kolle and Hetsch, which first appeared in 1906, edited now under the competent hand of Hans Schlossberger, a well-known student of infectious processes, assisted by a number of specialists. The book, described as a treatise, is in fact more detailed than the ordinary textbook, and really falls into the reference book class. The etiology, immunology, and clinical features of the different types of infection, bacterial, rickettsial, viral, fungus, and protozoan, are critically reviewed. Each section is followed by a brief bibliography, mainly of German articles, and the volume, substantially bound, terminates with an index of subjects covering 38 pages. The work opens with a section on the general principles underlying infections and their causes, natural and artificially produced immunity, specific immune bodies, anaphylaxis, the systematic classification of bacteria, and a discussion of the specific diseases of bacterial origin. The second section covers the rickettsioses and diseases caused by Bartonella and filterable micro-organisms other than viruses. The third part discusses the virus diseases and bacteriophages. The fourth section is devoted to fungus infections, with a chapter on those antibiotics that are products of fungi and other micro-organisms. The fifth section discusses the protozoan diseases. The text is systematically arranged, clearly written, and the typography is excellent. Many of the black and white illustrations are reproductions of good microphotographs. The color plates are excellent, and a few, such as the illustrations of skin reactions, are of clinical significance. The book thoroughly covers human and animal infections, and for those who read German it is a storehouse of valuable information.

Carbohydrate Metabolism: Correlation of Physiological, Biochemical and Clinical Aspects. By Samuel Soskin, M.D., Director of Medical Research Institute, Michael Reese Hospital, Chicago, and Rachmiel Levine, M.D., Director of Metabolic and Endocrine Research, Michael Reese Hospital. University of Chicago Committee on Publications in Biology and Medicine. Second edition. Cloth. $8.50. Pp. 346, with 75 illustrations. University of Chicago Press, 58th St. and Ellis Ave., Chicago 37; Cambridge University Press, Bentley House, 200 Euston Rd., London, N.W.1, 1952.

So much relevant experimental work has been published in the past six years that the authors had to revise this monograph quite extensively. They have not, however, altered the original plan, which divides the material into sections on biochemistry and energetics of carbohydrate metabolism, physiological considerations, critical survey of the classical criteria of diabetes, role of endocrine glands in carbohydrate metabolism, and an integration of physiological and clinical aspects. The make-up of the book is excellent.

Pharmaceutical Calculations. By Willis T. Bradley, A.B., A.M., Carroll B. Gustafson, Ph.C., B.S., A.M., and Mitchell J. Stoklosa, Ph.C., B.S., A.M., of Faculty of Massachusetts College of Pharmacy, Boston. Second edition. Cloth. $3.75. Pp. 290. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1952.

In this book, clear, concise instructions are given for performing the arithmetical operations required of a pharmacist and others, such as how to convert from the metric system to other systems of measurement, scale down or increase formulas, calculate doses, and prepare solutions. There is one chapter on discount and markup for the commercial pharmacist. A number of useful tables are included. Answers to the practice problems are in the back of the book. The print is good, and the binding is sturdy.

Cold Spring Harbor Symposia on Quantitative Biology. Volume XVI: Genes and Mutations. Cloth. $9. Pp. 521, with illustrations. The Biological Laboratory, Cold Spring Harbor, L. I., New York, 1951.

This volume consists of a series of papers related to the mechanism of heredity, presented by leading research workers in the field of genetics. For the most part, the communications are of a highly specialized nature, though the series of papers on genetic mechanisms in bacteria and bacterial viruses will be of interest to workers in the field of chemotherapy.

QUERIES AND MINOR NOTES

FUNCTIONAL HYPOGLYCEMIA

TO THE EDITOR:—*A 15-year-old boy, while digging a ditch, became extremely fatigued and pale, complained of being chilled, and had a temperature of 93.4 F. Immediately afterward he ate hungrily, and external heat was applied, with a subsequent rise in his temperature to 98 F within 45 minutes. He experienced no actual weakness or diaphoresis; there were no tremors or nausea. His blood pressure 45 minutes after this episode was 104/78 mm. Hg. This phenomenon has occurred less spectacularly many times in the past, always after strenuous exercise. The boy becomes pale, with a blueness around the eyes but not around the lips, a coldness of the hands but not of the feet, and extreme hunger, with relief occurring 15 to 30 minutes after eating.*

The patient was apneic and anemic at birth and required a transfusion. He had been asthmatic from the age of 2 years until about two years ago, when he had mumps. On the third day of this latter disease, a severe generalized lymphadenopathy with a spiking fever developed, and he was critically ill for two or three days. He is well-developed, brilliant, and an accomplished pianist. Examination of the eyes reveals moderate myopia and many scattered melanin deposits on the retina. There are no melanin deposits on the skin. Chest roentgenograms and the results of urinalysis, and a three hour glucose tolerance test were normal. The Thorn test showed a good eosinophil response (after more than three hours) to 25 mg. of corticotropin given by infusion in 500 cc. of a 5% glucose solution. The red blood cell count was 5,260,000, hemoglobin 16.3 gm. per 100 cc., white blood cell count, 5,400, with 30% filamented neutrophils, 25% nonfilamented neutrophils, 30% lymphocytes, 14% monocytes, and 1% eosinophils; 2 prolymphocytes and 4 irritation cells were seen; there was slight anisocytosis. The patient has been restricted from arduous work, with the result that there has been no recurrence of an attack. I hope you may be able to contribute some pertinent information in this case. *M.D., California.*

ANSWER.—From the data given there is no evidence that the patient's complaints are due to primary cardiovascular or central nervous system disease, nor does it appear that they are sequelae of previous infection. The significant facts in this case are (*a*) the initiation of the attack by moderately severe exercise (*b*) the development of acute hunger, and (*c*) the relief of all symptoms following ingestion of food. This combination of observations constitutes the classical findings of hypoglycemia. The single normal three hour glucose tolerance test carried out one week after the onset of symptoms does not rule out this diagnosis, which, of course, would be definitely established by obtaining a low blood sugar level determination at the time of an attack. Since the symptoms are relatively mild, with no periods of unconsciousness or convulsive seizures and since there has been no progressive increase in the frequency or severity of attacks, this case probably falls in the category of "functional" hypoglycemia or hyperinsulinism. These patients may maintain normal fasting blood sugar values, but they respond excessively to insulinogenic stimuli resulting in rapid depression of the blood sugar level; this syndrome is not associated with organic changes in the brain, liver, adrenal glands, pituitary, or pancreas. The description of this boy as intelligent and sensitive and as having a background of serious illnesses, which probably caused family concern and apprehension, would tend to substantiate certain emotional factors in the development of this condition, since it is thought to be initiated by an autonomic nervous system imbalance. Treatment should consist of a diet high in protein (120 to 140 gm. per day), relatively low in carbohydrate (60 to 80 gm. per day), with maintenance calories from fat. Within a short time, all restrictions on activity should be lifted so that he may lead a normal life.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

LEAD ENCEPHALOPATHY

TO THE EDITOR:—*A 46-year-old man whose personality hitherto had been well-integrated and "normal" now has anxiety, decreased libido, sudden tearfulness unprovoked and unaccompanied by feelings of sadness, irritability, and failure to comprehend as he formerly did. Results of hematological examination are normal. In 1949, he had lead poisoning, which was diagnosed in a hospital. There has been no exposure to lead since. Can the lead be considered responsible for the present psychiatric syndrome? He had lead line, stomatitis, gastrointestinal symptoms, hematological changes, and lead encephalopathy in 1949 and had two previous attacks in 1947 and 1948. There are no extrinsic psychogenic factors now.*

Jerome Kay, M.D., Wilmington, Del.

ANSWER.—The symptoms described are not unusual in the encephalopathy produced by plumbism and are compatible with this diagnosis. Persons with lead poisoning usually have absorbed lead for long periods, and, while a deleading program may remove most of the lead from the trabeculae, a considerable quantity still remains in the cortical bone. This lead is potentially dangerous and may be released at some future date if the patient is subjected to unfavorable influences, such as chronic or acute infections, undue fatigue, improper diet with malnutrition, or alcoholism. The presence of lead in the blood in concentrations over 0.06 mg. per 100 cc. and in the urine in concentrations over 0.1 mg. per liter, the presence of a lead line, or stippling of the red blood cells is indicative of absorption. If these studies are negative, psychiatric consultation is indicated.

If a diagnosis of plumbism is established, rapid deposition of the circulating lead should be effected. The patient should be placed on a high calcium (2 gm. per day), adequate phosphorus (1.5 gm. per day) diet. This may be in the form of milk, cheese, legumes, and greens and may be supplemented by dicalcium phosphate and calcium gluconate taken orally. Vitamin D in doses of 1,200 to 1,500 units per day should be prescribed. The procedure of choice after cessation of symptoms is controversial. Some workers recommend a slow deleading or detoxification program (Aub, J. C.: Biochemical Behavior of Lead in Body, *J. A. M. A.* **104:87** [Jan. 12] 1935), while others suggest no further therapy other than avoidance of precipitating factors as listed above, with calcium and vitamin D supplements taken during periods of stress or infection.

CORONARY DISEASE

TO THE EDITOR:—*What is the differential diagnosis of coronary occlusion, coronary thrombosis, and myocardial infarction? What is the differential diagnosis in a severe, acute attack of orthopnea on a cardiac or asthmatic basis in an old patient with no former heart complaints but with a history of chronic asthma?* *M.D., Ohio.*

ANSWER.—Coronary occlusion and coronary thrombosis refer to an identical situation. A coronary occlusion occasionally is due to an embolus, but the vast majority of occlusions are due to a thrombus, hence the terms coronary occlusion and coronary thrombosis are interchangeable. Myocardial infarction, on the other hand, is the end result of a coronary occlusion, and this term refers to the ischemia and softening of the area of heart muscle that has been deprived of its adequate blood supply. A severe, acute attack of orthopnea, if of cardiac origin, indicates left ventricular insufficiency. The direct causes of this insufficiency are varied, the commonest being coronary thrombosis and severe hypertension.

TREATMENT OF ALCOHOLISM

To the Editor:—*In the observation ward of our county hospital 40% of the admissions are alcoholics. I would like to try the insulin, glucose, thiamine treatment. Please tell me something about it.* *M.D., New Jersey.*

Answer.—The insulin, glucose, thiamine treatment is instituted as follows: After a short physical and neurological examination has been made, the patient is placed on a couch and given 1 to 2 grains (0.06 to 0.13 gm.) of phenobarbital and 3 grains (0.19 gm.) of diphenylhydantoin (dilantin®) sodium as an anticonvulsant. At the same time, the arm is prepared for immediate intravenous injection of 1,000 to 2,000 cc. of 10% dextrose in isotonic sodium chloride solution. The intravenous drip flow is then started. As this goes on, 100,000 to 200,000 units of thiamine hydrochloride and 25 units of insulin are introduced into the tubing. One and a half hours later, the second dose of phenobarbital and diphenylhydantoin sodium is given, two hours later a third dose is given and about three hours later a fourth dose is given. No alcoholic beverage of any kind is given, and all drinking of alcoholic beverages is immediately stopped. Candy and heavily sugared orange juice should be available if mild insulin shock reactions occur. This treatment will clear up uncomplicated cases in persons under age 55 in about 10 hours. In some instances it may be wise to administer intravenously another 1,000 cc. of the solution with insulin and vitamin B_1 on the following day. For several days after the first visit the patient should be given 1 grain (0.06 gm.) of phenobarbital and 3 grains (0.19 gm.) of diphenylhydantoin sodium three times a day and once at night, and from 50,000 to 100,000 units of thiamine hydrochloride intramuscularly.

PYLOROSPASM

To the Editor:—*A patient suffers daily from spasmodic contractions of the pyloric valve, which can be cured in about three weeks by daily doses of 100,000 I.U. of vitamin D. The pain can be temporarily alleviated by an injection of ¼ grain (15 mg.) of morphine. The cure is not permanent, and the attacks recur in about six months after the vitamin D is discontinued. Removal of an abnormal gallbladder some years ago provided only temporary relief. Can you suggest a better treatment?* *M.D., Maryland.*

Answer.—Persistent pylorospasm or recurrent pylorospasm in the absence of organic abnormality must be considered functional. It is not unlikely that patients who have had a cholecystectomy may have a recurrent pylorospasm with a postcholecystectomy syndrome. The relief that your patient obtained from daily doses of 100,000 I.U. of vitamin D is somewhat baffling. If vitamin D could do any good at all, the condition could be remotely related to associated arthritis, and the pain in the abdomen that was called pylorospasm might have been interdependent on radicular type pains. If the pain is of functional origin, it should be handled according to the physician's ability to interpret the phenomenon, or the patient should be referred to a psychiatrist. This consultant has seen persistent and recurrent pylorospasm associated with psychogenic disturbances that have certainly been improved after psychiatric consultation. Morphine can only work by rendering the patient somnolent and raising the threshold for the discomfort. Parasympatholytic drugs, which are also antispasmodics, would be far more beneficial to this patient than morphine injections.

INFECTIOUS HEPATITIS OF DOGS

To the Editor:—*Is infectious hepatitis of dogs transmissible to humans?* *Henry A. Hornthal, M.D., Alexandria, Va.*

Answer.—Infectious hepatitis of dogs apparently is not transmissible to humans. Veterinary pathologists have observed its similarity to certain human conditions, but despite the fact that many have worked with affected animals for years, none are known to have become infected. It is caused by a virus and can be prevented by a vaccine, but, as with so many virus diseases, there seems to be no specific curative treatment for affected animals.

RAZORS AND HOMOLOGOUS SERUM HEPATITIS

To the Editor:—*I would like an opinion on the danger of transmitting homologous serum jaundice by means of straight razors used in barber shops. Is there any method of killing the virus of serum hepatitis other than autoclaving? What technique for autoclaving is recommended to protect against this form of hepatitis?* *J. C. Shrader, M.D., San Francisco.*

Answer.—Since such procedures as tattooing, acupuncture for diagnostic purposes, and the application of contaminated human thrombin to a wound have been shown to transmit homologous serum hepatitis, there would seem to be no reason why, in a cut, a straight razor would not also transmit the disease. To date, no such cases have appeared in the literature, but the possibility exists nonetheless. The virus of serum hepatitis can be inactivated by ultraviolet irradiation, which of course is not practical for office use. Water sterilization at 60 to 80 C for one or two hours will kill the virus as will any of the standard autoclaving techniques. A pressure of 17 lb. for 20 minutes at 112 C should be adequate. It is also likely that any of the instrument sterilizing solutions would serve the purpose, provided the instruments were left in the solution long enough. A four hour exposure would appear to be minimal.

THYMECTOMY FOR MYASTHENIA GRAVIS

To the Editor:—*What is the present consensus regarding the efficacy of thymectomy for myasthenia gravis in an adult man?* *O. C. Amstutz, M.D., Bellefontaine, Ohio.*

Answer.—Whether the thymus gland plays a role in the etiology of myasthenia gravis remains undetermined. About 50% of patients with the disease have either a tumor or hyperplasia of the thymus gland, and this is the basis for the suspected relationship between thymic hyperfunction and myasthenia gravis. Pharmacologic investigations have by no means conclusively confirmed the clinical impression that hyperfunction of the thymus gland is the cause of myasthenia gravis. Therefore, surgical removal of the gland is indicated in the presence of tumor or gross hyperplasia, but it does not appear to be justifiable as a routine procedure. Furthermore, thymectomy in the absence of tumor or hyperplasia usually does not give striking clinical results, and the remission rate is low. Since thymic tumors are often malignant, their removal for this reason is clearly indicated.

HAIR ON THE LEGS

To the Editor:—*What is the best method of bleaching hair on the legs of a 13-year-old girl who is very conscious of it? Is shaving the legs ever advised?* *Samuel L. Greenfield, M.D., Philadelphia.*

Answer.—Shaving, bleaching, and the use of abrasives are probably the most frequently employed methods of removing unwanted hairs from the legs. Apparently these methods are harmless if they are employed intelligently, since many girls, after first applying talcum powder to the area, dry shave without harmful effects. Others bleach the hairs by applying a mixture of fresh hydrogen peroxide with a drop or two of ammonia water or hydrogen peroxide in magnesium carbonate. A proprietary preparation, superoxol,® also is used. Fine pumice stones, made for the purpose, are used as abrasives, with care being taken to rub in the same direction each time. Chemical depilatories are sometimes used but with some risk, especially for a young girl.

MYOCARDIAL INFARCTION

To the Editor:—*A woman, aged 64, had a posterior coronary infarction four years ago and has no clinical symptoms at present. Is administration of oxygen indicated as preventive treatment; if so, what dosage is recommended?* *M.D., Mexico.*

Answer.—The answer is probably "no" so far as our current experience is concerned. There is no knowledge of any sure prevention of myocardial infarction from coronary atherosclerotic occlusion at present. Certain long follow-up studies are being made of the possible beneficial effect of anticoagulants.